

MACWORLD

The Macintosh® Magazine

October 1989 \$3.95

Canada \$4.95

SPECIAL ISSUE

DESKTOP PUBLISHING

MACWORLD

**MACWRITE II vs. MS WRITE
vs. WRITENOW 2.0**

by Dan Littman and
Tom Moran

DTP SERVICE BUREAUS
How to Find the Right One

CLIP ART BUYER'S GUIDE
45 Companies' Products

16 LASER PRINTERS
Third Annual Survey

COLOR PREPRESS

10 BEST INITs

Editors' Choice

32-Bit Color for QuickDraw—At Last



In a move that promises to accelerate the use of realistic color in graphics applications, Apple has finally released its version of QuickDraw for 16-, 24-, and 32-bit color graphics boards. The Color Extensions release, which Apple will provide to customers as a free upgrade through dealers and online bulletin boards, provides a standard way for applications to create and display graphics using over 16 million colors.

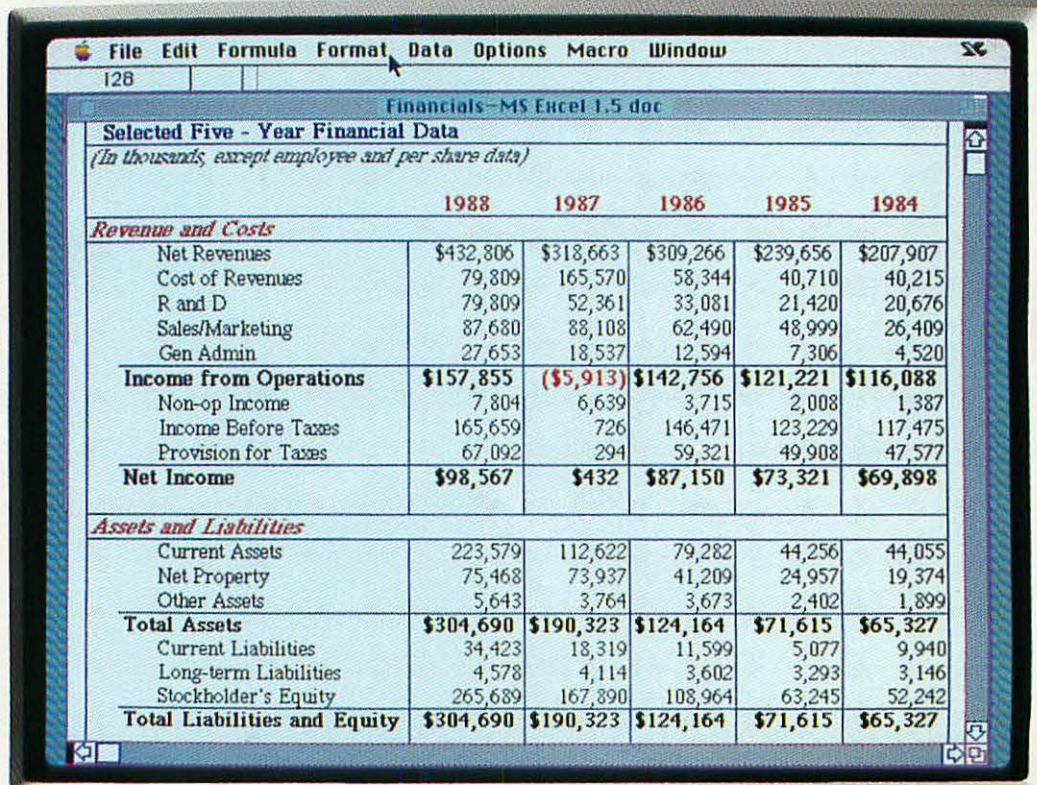
Since the previous version of QuickDraw was limited to 256 colors, few software applications could take advantage of 24-bit color, because each 24-bit graphic image

QuickDraw allocates 8 bits for alpha, or transparency, information. Although not im-

color fidelity



90% of Macintosh spreadsheet users have been working on this program.



	1988	1987	1986	1985	1984
Revenue and Costs					
Net Revenues	\$432,806	\$318,663	\$309,266	\$239,656	\$207,907
Cost of Revenues	79,809	165,570	58,344	40,710	40,215
R and D	79,809	52,361	33,081	21,420	20,676
Sales/Marketing	87,680	88,108	62,490	48,999	26,409
Gen Admin	27,653	18,537	12,594	7,306	4,520
Income from Operations	\$157,855	(\$5,913)	\$142,756	\$121,221	\$116,088
Non-op Income	7,804	6,639	3,715	2,008	1,387
Income Before Taxes	165,659	726	146,471	123,229	117,475
Provision for Taxes	67,092	294	59,321	49,908	47,577
Net Income	\$98,567	\$432	\$87,150	\$73,321	\$69,898
Assets and Liabilities					
Current Assets	223,579	112,622	79,282	44,256	44,055
Net Property	75,468	73,937	41,209	24,957	19,374
Other Assets	5,643	3,764	3,673	2,402	1,899
Total Assets	\$304,690	\$190,323	\$124,164	\$71,615	\$65,327
Current Liabilities	34,423	18,319	11,599	5,077	9,940
Long-term Liabilities	4,578	4,114	3,602	3,293	3,146
Stockholder's Equity	265,689	167,890	108,964	63,245	52,242
Total Liabilities and Equity	\$304,690	\$190,323	\$124,164	\$71,615	\$65,327



So have we. Introducing Microsoft Excel 2.2.

In 1985, not long after the Macintosh[®] was unveiled, Microsoft[®] Excel became the most compelling reason to buy one.

Within minutes, it became a standard on the Macintosh. Before we knew it, a full 9 out of 10 Macintosh spreadsheet users were swearing by it. Not surprisingly, they still are.



Used to be, 1MB was enough. Now with Microsoft Excel 2.2, you can take full advantage of the 8 megs in today's most powerful Macintoshes.

But, of course, we weren't satisfied to leave well enough alone—and Microsoft Excel version 2.2 has come to the small screen. In a big way.

In mathematical terms, 2.2 is greater than 1.5. In technical terms, your spreadsheets aren't limited to 1MB of memory—version 2.2 makes the most of even 8meg machines.

Which translates into spreadsheets of outrageous proportions.

Equally outrageous: 40% faster calculations—thanks to advanced intelligent recalculations—thanks to advanced intelligent recalculations.

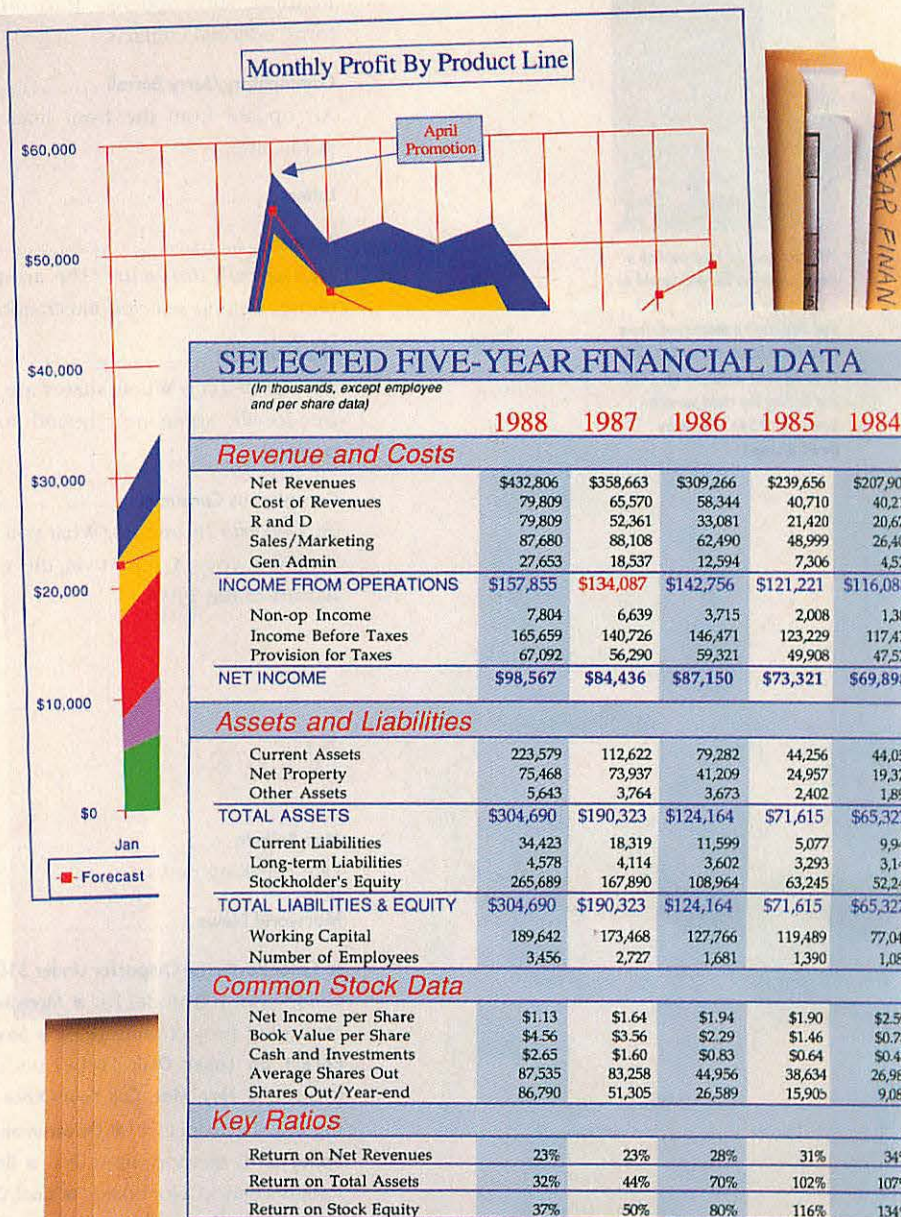
As for presentation? Version 2.2 also lets you highlight data in ways well worth highlighting: You can pick up to 256 different fonts per sheet, including up to six styles and eight colors. You can change row height. You can shade. And basically pack your documents with more visual punch than ever before.

Microsoft Excel version 2.2. Another improvement designed to make Mac[®] enthusiasts even more enthusiastic.



Something 90% of you are already used to. And you other 10% easily can be.

Microsoft
Making it all make sense.



Now pick from 256 fonts. Change row height. Shade. Add notes. And get used to the sound of applause.

MACWORLD

The Macintosh® Magazine

October 1989

DEPARTMENTS

How to Contact Macworld12
Reprints, subscriptions, *Macworld* in micro-form, editorial contacts.

Commentary/Jerry Borrell.....23
An update from the front lines of desktop publishing.

Letters.....35

Art Beat.....47
By Deborah Branscum/The artists and techniques behind selected illustrations.

The Iconoclast.....53
By Steven Levy/When shareware becomes a free-for-all, someone's bound to be disappointed.

Conspicuous Consumer.....63
By Deborah Branscum/What you don't know can hurt you. A report on the occupational hazard of the 1990s.

State of the Mac.....77
By Thom Hogan/Macs are changing—should you stay put, upgrade, or start over?

New Products.....217
A quick look at new Macintosh hardware, software, and accessories.

HOW TO/Quick Tips.....237
By Lon Poole/Raw hard disks, mailing-list duplicates, quick disk ejection, and more.

HOW TO/Getting Started with Laser Printers.....247
By Jim Heid/From PostScript to QuickDraw printers: how they work and what to look for when you buy.

HOW TO/Insights on Excel 2.2.....255
By Charles Setter/Making the most of Excel's new features.

Updates.....261
The latest software upgrade news.

Where to Buy.....265
Contact information for products in this issue.

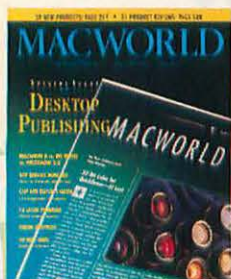
Best-Sellers.....300

NEWS

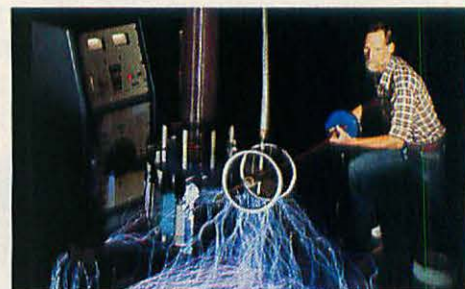
Mac Bulletin.....17
Late-breaking news.

Macworld News.....93

■ **Color PostScript Output for Under \$10,000** QMS's ColorScript 100 Model 10. ■ **More Best-Laid Plans** Managing project managers. ■ **Saving the Rain Forest on Laser Disk** Hypermedia ecology project. ■ **Hey, Mac, Call Your Office** Commanding the Mac from afar. ■ **Government Style** SGML comes to the Mac. ■ **Packing Lots of Memory in a Small Space** 4MB memory modules. ■ **But Does It Do Symbols?** AI for the Mac. ■ **Accelerating 24-Bit Color** Radius's QuickColor board. ■ **Cool, Clear Water** Controlling desalinization with the Mac. ■ **Schlumbering Giants** Highly specialized CAD. ■ **The Visual Almanac** Educational multimedia at Apple. ■ **For Cosmic Kids (of All Ages)** HyperCard-based adventure. ■ **MacPaint Meets Tesla** Lightning as art. ■ **Flicker-free Color for the SE/30 E-Machines'** 72Hz monitor. ■ **Have Mac, Will Travel** NexSys portable. ■ **Survey: What's Your Bottleneck?** Most cite processing power.



Whether you desktop-publish a large magazine like *Macworld* or a two-page newsletter, you'll find this issue a must-read, from choosing a laser printer (p. 120) to doing color prepress (p. 146) and finding the right service bureau (p. 154). (Photo by David Bishop.)



FEATURES

Paging All Printers 120

By Jim Heid/Shopping for a printer can seem quite overwhelming. Get a head start with this overview of 16 laser printers.

Write, Write, Write 130

By Robert C. Eckhardt/Want an alternative to expensive, multifeatured word processors? See how three moderately priced applications compare.

The Clip Art Buyer's Guide 138

By Erfert Fenton/Use our annual shopping guide to find out which clip art packages contain the images you're after.

The Prepress Connection 146

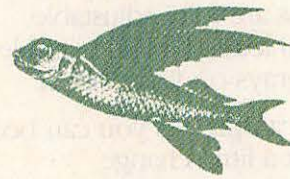
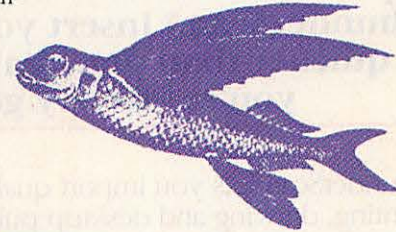
By Steve Roth/Is Mac publishing going to Hell? How about Crosfield, Scitex, and Atex? New schemes for linking Macs to minicomputer prepress systems are bringing desktop publishing to the world of high-quality color.

At Your Service (Bureau) 154

By Erfert Fenton/How to find the right PostScript imagesetting bureau and get quality output without headaches.

Start with Utilities 160

By Robert C. Eckhardt/Tame the multitude of INITs running loose in your System.



REVIEWS

SuperCard 1.0 168
Hypermedia design environment.

Microsoft Word 4.0 170
The latest version debuts.

MacLite 172
Battery-powered Sinclair Z88 portable computer.

DocuComp 1.0 176
Document-comparison utility.

Virtual 1.05 179
Virtual-memory system.

Super 3D 2.0 181
Three-dimensional modeling programs.

MacFontware 183
High-quality bitmapped fonts.

Vision 1.01 185
Advanced MIDI Sequencer.

Agfa Focus S800GS 190
Gray-scale flatbed scanner.

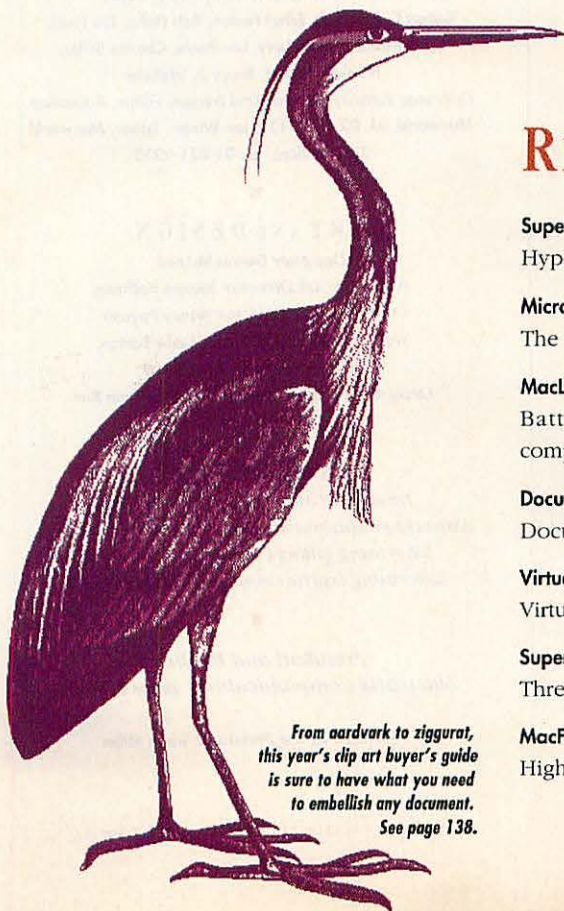
Aask 1.0, INITPicker 1.0, and Inix 1.1 192
INIT managers.

Different Drummer 197
Graphic rhythm composer.

Epson LQ 950 and Epson LQ Printer Software for Macintosh Computers 1.0 199
24-pin dot matrix printer with Macintosh software.

ExpressWrite 1.01 and QuickLetter 1.0 201
Letter-writing desk accessories.

Window Shopping 205
FastTrack Schedule 1.02, ResumeExpert, UNITize 1.1, PictureBook 2.1



From aardvark to ziggurat,
this year's clip art buyer's guide
is sure to have what you need
to embellish any document.
See page 138.

QUICK CHANGE ARTIST.

You need a gray scale scanner for your Mac. So you go to your ImageWriter.[®] Pop out the ribbon cartridge. Snap in ThunderScan.[®] Insert your artwork. And quicker than you can say Van Gogh, you're already going.

ThunderScan lets you import quality images into all painting, drawing and desktop publishing programs. Contrast and brightness are fully adjustable. And now ThunderScan 5.0 loads TIFF files and lets you display and edit grays on your Mac II.

Priced at just \$249, ThunderScan proves you can become an artist, with just a little change.



ThunderScan[®]
FOR MACINTOSH

21 Orinda Way, Orinda, CA 94563
415/254-6581 FAX: 415/254-3047

ThunderScan is compatible with the Macintosh 512K enhanced, Plus, SE and Mac II and all ImageWriter models except the LQ. Use on the Mac II requires our *Power Accessory for Macintosh II*. ThunderScan, Thunderware and its logo are trademarks of Thunderware, Inc. Macintosh and ImageWriter are trademarks of Apple Computer, Inc. ©1989 Thunderware, Inc.



Circle 176 on reader service card

MACWORLD

Editor-in-Chief Jerry Borrell

EDITORIAL

Executive Editor David Ushijima
Managing Editor Charles Barrett
Senior Editor/Features Adrian Mello
Senior Associate Editor/Lab Manager Chip Carman
Senior Associate Editor/Features Joe Matazzoni
Senior Associate Editor/East Coast Brita Meng
Editorial Manager Jane Lagas
Associate Editor/Departments Deborah Branscum
Associate Editor/News Dan Littman
Associate Editor/News Tom Moran
Associate Editor/Reviews Carol Person
Associate Editor/Features Cheryl E. Spencer
Associate Editor/Features Suzanne Stefanac
Senior Production Editor Luis A. Camus
Senior Copy Editor Ruth Henrich
Assistant Editors Cathy E. Abes, Mark Hurlow,
Mary Margaret Lewis, Liza Weiman
Production Editor Annie Jenkel
Copy Editors Marjorie Baer, Emily Bower,
Felicity O'Meara, Katherine L. Ulrich
Assistant Production Editor Barbara Tannenbaum
Editorial Assistant Pamela T. Creighton
Editorial Administrative Assistants
Joyce C. Ripp, Lyn Taylor
Assistant to the Editor-in-Chief Lisa Barshay
Contributing Editors Nancy E. Dunn,
Robert C. Eckhardt, Erfert Fenton, Rob Hahn, Jim Heid,
Dave Kosiur, Steven Levy, Lon Poole, Charles Seiter,
Franklin Tessler, Bruce F. Webster
Overseas Editors Osmund Lind Iversen, *Editor, Australian*
Macworld, tel. 02-439-5133; Ian Winter, *Editor, Macworld*
(U.K. edition), tel. 01-831-9252

ART AND DESIGN

Designer Dennis McLeod
Associate Art Director Joanne Hoffman
Assistant Art Director Nancy Paynter
Senior Design Associates Leslie Barton,
Andrew Faulkner, Arne Hurty
Design Associates Martha Katt, Hae Yuen Kim

PRODUCTION

Director of Manufacturing Anne Foley
Assistant Production Manager Claudia Dawn Smukler
Advertising Billing Coordinator So Fong Yip
Advertising Traffic Coordinator Annette Garcia

President and Publisher
Macworld Communications James E. Martin

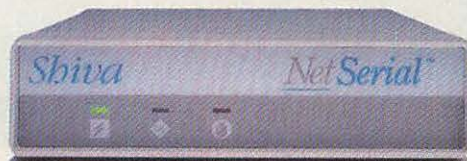
Assistant to the President Susan Miller

Publisher's statement can be found on page 12.



There's A Better Way To Share Peripherals.

If you have TOPS® or AppleShare®, you don't have to run around anymore to share files. So why do it to share peripherals? A Shiva NetSerial lets Macs and IBM PCs or compatible MS-DOS computers on your AppleTalk® network share just about any serial device there is. In fact, most popular devices can't be shared any other way. Which is why many peripheral manufacturers recommend NetSerial for use with their products. It makes expensive peripherals, such as Hewlett-Packard



plotters, LaserJet® printers, Hayes and compatible modems or almost anything else with a serial port available to any Mac or PC on your network.

So you don't have to buy extra equipment or run around your office with floppy disks. You can even use the NetSerial to share a minicomputer. Installing and using the NetSerial is easy. Thousands are in use today. If you have an AppleTalk® network, you need a NetSerial. Call for the name of your nearest dealer. **1-800-458-3550.**

NetSerial[™]
by Shiva

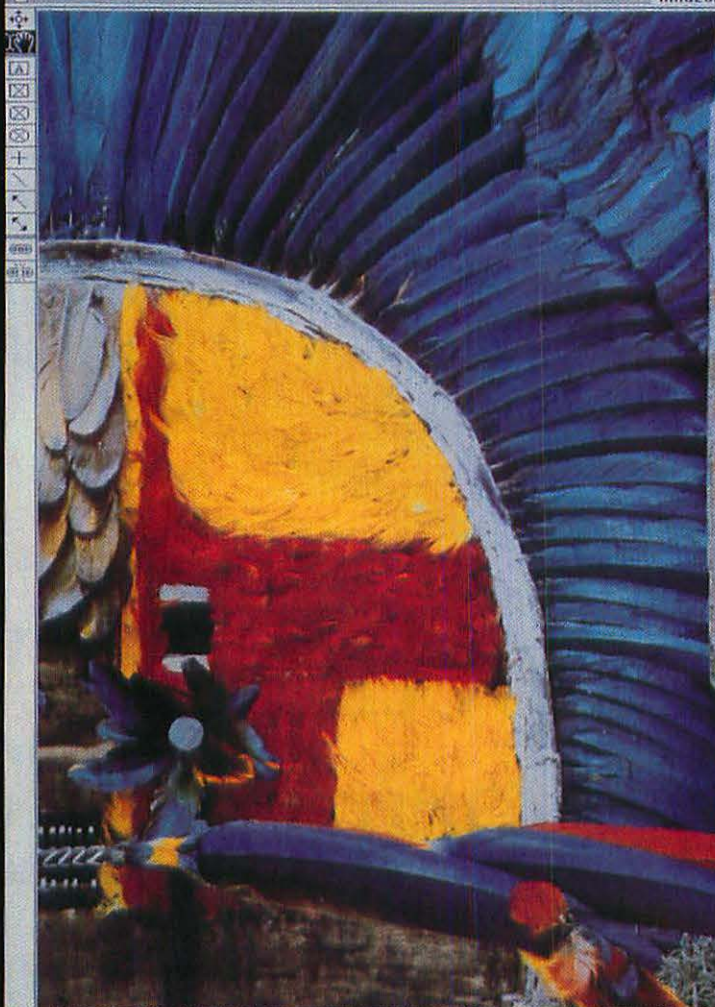
We're Putting Networks To Work[®]

Shiva Corporation, 155 Second St., Cambridge, MA 02141

All product names are trademarks of their respective manufacturers.

File Edit Style Item Page View Utilities

Amazon Spread



AMAZON

C O L O R



IT IS THE SECOND LARGEST RIVER IN THE WORLD. AND CARRIES NEARLY TWENTY PERCENT OF THE WORLD'S TOTAL WATER TO THE OCEAN. IT STARTS HIGH UP IN THE PERUVIAN ANDES AND PROVIDES THE ONLY MEANS OF TRANSPORTATION THROUGH THE LARGEST RAIN FOREST. IT IS THE AMAZON. IT WAS DISCOVERED BY THE WESTERN WORLD IN 1541 BY FRANCISCO DE ORELLANA.

Page 1



RADIUS PRESENTS THE TWO MOST COLORFUL PAGES IN THE HISTORY OF MACINTOSH.

Now for the first time in the history of Macintosh, you can work across two full pages with the photographic quality of 24-bit color. Introducing the Radius DirectColor™ Series.

Completely compatible with Apple's 32-bit QuickDraw, it's the precise electronic medium for working with real colors, real type and real photographs across two full pages.

With simultaneous access to every one of Macintosh's 16.7 million colors, our Radius DirectColor/24™ is the perfect tool for retouching color photographs or producing high quality color publications.

If you don't require the full palette of Macintosh color, the Radius DirectColor/16™ lets you work with 32,768 colors simultaneously.

And, upgrading to the Radius DirectColor/24 is as simple as adding video RAM.

For those of you who use only 256 of the Macintosh colors at one time, there's the 8-bit Radius Color Display™ System.

No matter which Radius color system you choose, you'll be working across two flicker-free, paper-like pages that give you 30% more working area than commonly seen on other 19 inch displays. Which means your work is never cropped off at the sides or chopped off at the bottom.

Naturally, you'll also reap the benefits of all the classic RadiusWare™ features.

Including Tear-off Menus in every application. The ability to capture any portion of your image as a PICT file. Small or large menu bars. And direct control panel access.

So if you've been waiting to work with real colors across two real pages, visit a Radius Authorized Dealer. You can find one near you by calling 1-800-227-2795*.

And get ready to make some colorful history of your own.



The Radius Color Display showing two full pages. (1152 x 882 pixels)



Other color monitors crop off the sides and chop off the bottom. (1024 x 768 pixels)

radius™
Intelligent Hardware™

Circle 46 on reader service card

*If you live outside the continental United States, call 1-408-954-6852 for the name of a Radius International Distributor.

This image was scanned with a Howtek Scanmaster, imported into Quark XPress and displayed by and photographed on a Radius Color Display with a Radius DirectColor/24 Interface.

© 1989 Radius Inc., Radius, the Radius logo, Intelligent Hardware, Radius DirectColor, Radius Direct Color/16 and 24, Radius Color Display and RadiusWare are trademarks or registered trademarks of Radius Inc. All other brand names or trademarks or registered trademarks are the property of their respective holders.



HOW TO ELIMINATE HOLES IN YOUR HARD DISK FOREVER

DiskExpress II features ALSoft's revolutionary new Disk Optimatic™ technology designed to optimize hard disk performance forever. It's the newest, fastest, safest way to optimize. ■ DiskExpress II automatically optimizes whenever you stop working on your Mac and lay down your mouse. Because it's fully transparent, DiskExpress II intuitively works around your busy schedule without tying up your computer. DiskExpress II constantly prioritizes and groups your frequently used files for maximum performance. ■ DiskExpress II also continually optimizes your disks one file at a time, so it can be interrupted at any time without scrambling any of your information. In fact, DiskExpress II can optimize even if there's virtually no free space left on your disk. DiskExpress II is also completely compatible with AppleShare™ and TOPS®, and it will dramatically speed up your network file server. ■ To reserve your FREE DiskExpress II (retailing for \$89.95 when released in September) including a FREE bonus of ALSoft's MultiPartition™ disk partitioner for even better performance, simply order DiskExpress 1.5 today (suggested retail \$69.95). You'll not only start optimizing right now and save at least \$20, you'll be the first to receive your new FREE DiskExpress II to keep you optimized forever.

ALSoft, Inc.
P.O. Box 927, Spring, TX 77383-0927
713/353-4090

ALSoft

Circle 202 on reader service card

MACWORLD

Vice President/Sales Steven J. Rosenfield

MARKETING AND ADVERTISING

Director of Advertising Sales Patricia Navone
(415/243-0505)

Senior Account Manager/No. California (San Francisco) Penny Rigby (415/243-0505)

No. California (San Jose) Cherie La France
(415/243-0505)

Northwest Regina T. Salaices (415/978-3155)

Midwest Shannon Dolan (312/827-4477)

Southeast Kathy Isaacs (404/394-0758)

New England Joan Flynn (508/879-0700)

Eastern Advertising Manager Bill Thompson
(201/967-1350)

Mid-Atlantic Annette Bremer (201/967-1350)

So. California Paul Dudas (714/250-1307)

Southwest, Texas Cathi Tucker (714/250-1307)

Macworld Catalog Carol Felde, Niki Stranz
(415/978-3152; 415/978-3105)

Director of Marketing Services Rosie McClellan

CIRCULATION

Circulation Manager Lindsay Davidson

Fulfillment Coordinator Evelyn Adenau

Promotion Coordinator Lori Hitchcock

Circulation Assistant Catherine Huchling

Single-Copy Sales Director George Clark

Single-Copy Sales Rep Martin Garchar

RESEARCH

Director Cheryl Woodard

Manager Ralph Ames

Market Analyst Ray Petsche

Research Assistants John Najarian, Bill Segovia,
Scott Shores

ADMINISTRATION

Director of Finance Vicki Peilen

Director of Business Development Daniel Orum

Corporate Business Manager Christina W. Spence

Accounting Manager Pat Murphy

Director of Human Resources Shelly Ginethal

Information Systems Manager Walter J. Clegg

Founder David Bunnell

Founding Editor Andrew Fluegelman 1943-1985

DiskExpress™ II
Disk Optimizing
\$89.95

★★★★★
DiskExpress™
Disk Optimizing
\$69.95

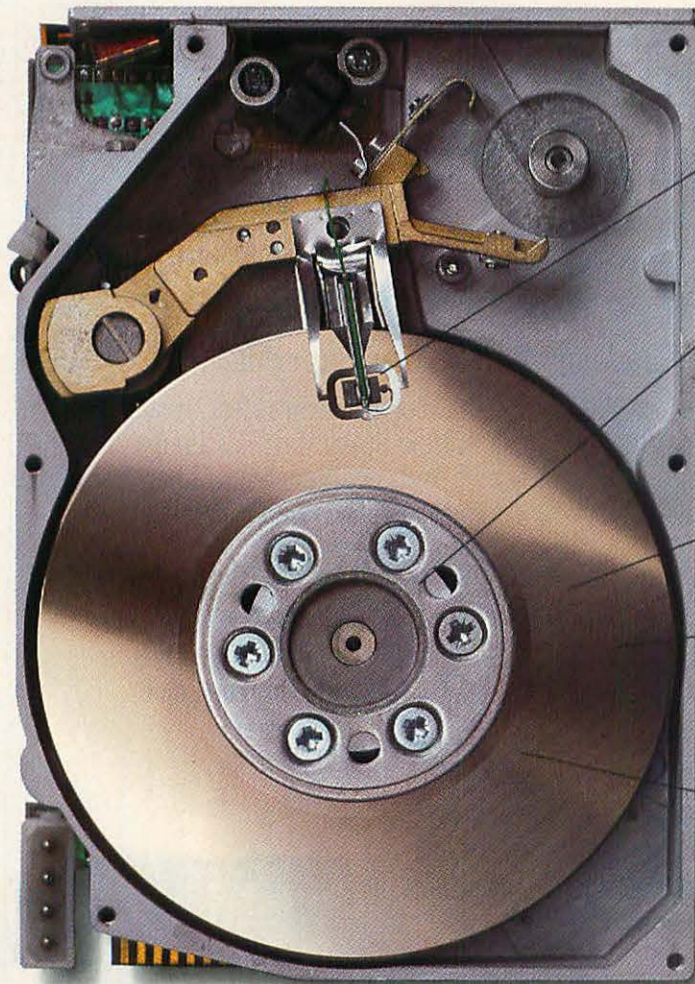
★★★★★
MultiDisk™
Disk Partitioning
\$69.95

★★★★★
MasterJuggler™
Resource Optimizer
\$89.95



ALSoft, MasterJuggler, DiskExpress, and MultiDisk are trademarks of ALSoft, Inc. All other trademarks acknowledged. © 1988 ALSoft, Inc. All rights reserved.

NEW SUM II PROTECTS YOUR DATA, INSIDE AND OUT.



Recovers lost data on floppies and crashed hard disks. Repairs crashed hard disks in minutes with new SUM Quick Fix.

Protects your data against hard disk crashes and file deletions with an automatically updated hard disk "map."

Speeds up hard disks. Optimizes, defragments, erases free space, verifies data, and locks out bad sectors to keep disks fast and safe.

Provides complete data security. Creates hard disk partitions which you can encrypt and password protect. Encrypt files, folders, and entire volumes. Secure data with two forms of DES encryption.

No learning required. Easy user interface makes repair, recovery and hard disk tune-up a snap. Just tell SUM II what you want to do, and its new Disk Clinic automatically launches the utility you need.

Backs up hard disk data fast, and allows incremental backups, from one file to entire hard disks. Back up to floppies, other hard disks, and tape drives.

For its unparalleled data protection, SUM™ won *MacUser's* 1989 Editor's Choice, *Macworld's* 1989 Reader's World Class Award, and *MacUser's* Highest Rating, Five Mice. New SUM II is even better. Inside, SUM II features an improved Shield, the automatic data protection and recovery utility that has won over critics and Fortune 500 users alike.

Outside, SUM II extends its data recovery power by adding SUM Backup, a complete Mac backup utility which backs up selected files or entire hard disk volumes to floppies in minutes.

With SUM Shield for protection and backup disks for insurance, your data survives virtually any disaster. Because it's protected quite literally, inside and out.

See your dealer or order today:
(800) 228-4122 Ext. 685G

SYMANTEC™



Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. 408/253-9600.
Current SUM Users, or MacZip users upgrade now to new SUM II. Call Symantec Customer Service at 408/252-3570.
SUM is a trademark of Symantec Corporation. © 1989 Symantec Corporation

Circle 237 on reader service card

Ultimate choice.

The Spectrum/24 card for the Macintosh II.
True color display on the most popular monitors. Including ours.

The first. And still champion.

Spectrum from SuperMac™. The first high-performance color graphics card for the Macintosh.* To bring 256 colors to a 19" display. And to smaller monitors, too. With the Spectrum's Virtual Desktop™. So any part of an image too large to fit can still be seen. With hardware pan. And hardware zoom, for 2x magnification. Instantly.

Now we're first again. With the new Spectrum/24™. Bringing the same high-performance features to *true color*. Fully supporting Apple's 32-Bit QuickDraw™.

Bring your work to life.

Work with up to 16.8 million colors. And display hundreds of thousands of colors at once. To create striking, photographic-quality images with lifelike tones and color gradations. For all your work in desktop publishing and graphic design. Presentations. Video and animation.

With the Spectrum/24, *you* choose the monitor. For the advanced graphics subsystem that's right for you.

No other card works with more popular color monitors. SuperMac's 19" and 16" high-performance and 19" standard displays. Apple's 13" color monitor. Plus NTSC RGB

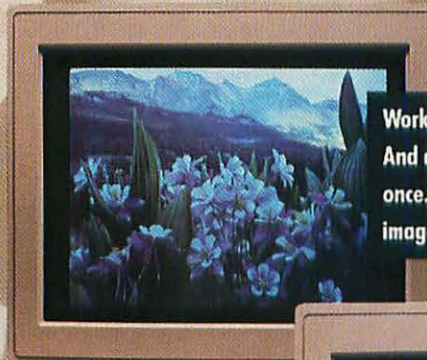
monitors and output devices. For the right advanced graphics subsystem for your business. And your budget.

Trade up to true color. SuperMac makes it easy.

With our TrueColor TradeUp™ offer.* Just send us your NuBus™ compatible SuperMac, RasterOps™ or Apple color graphics card. And get a Spectrum/24 at substantial savings. Contact Customer Service for details.

So move up to the ultimate in color display.

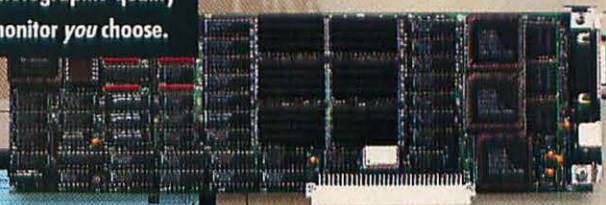
See your authorized SuperMac dealer today. For the Spectrum/24 and the monitor that best meets your needs. For your best work—in true color.



Work with up to 16.8 million colors. And display hundreds of thousands at once. To create photographic-quality images. On the monitor *you* choose.



Use true color images to add dramatic impact to desktop publishing documents. And all your other work.



TrueColor TradeUp™

U.S. Suggested Retail Price
\$3,999
With TradeUp
\$2,499

The first. And still champion.



485 Potrero Avenue • Sunnyvale, CA 94086
408 • 245 • 2202

*Expires December 31, 1989.

© 1989 SuperMac Technology All Rights Reserved SuperMac, Spectrum/24, Virtual Desktop and TrueColor TradeUp are trademarks of SuperMac Technology. Apple and Macintosh are registered trademarks, and QuickDraw is a trademark of Apple Computer, Inc. All other brand and product names are trademarks of their respective holders.

Circle 105 on reader service card

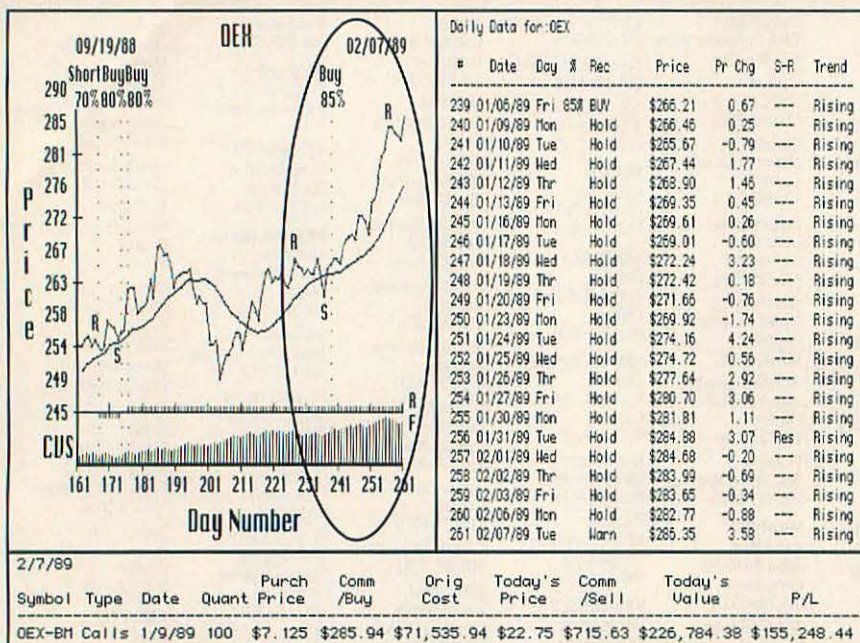
Your choice.

See for yourself. Visit any of these authorized SuperMac dealers today. And find the advanced graphics subsystem that's right for you.

ALABAMA Huntsville Abax Corporation 205-536-7292	San Francisco Nynex Business Center 415-777-3033	Nynex Business Center 305-731-6890	Schaumburg Heath Zenith 312-330-1717	Cambridge Tech Computer Store 617-497-0395	Forsythe Computers 314-231-6655	Nanuet Calculator & Computer 914-623-7300	Computer One 918-585-1223	Dallas Nynex Business Center 214-851-5300
ARIZONA Phoenix Nynex Business Center 602-279-2004	Software For LE\$S 415-753-1066	The Byte Shop 305-486-2988	Skokie Heath Zenith 312-583-3920	Canton NEECO 617-821-2747	Forsythe Computers 314-962-9100	New York Nynex Business Center 212-608-7113	OREGON Portland Nynex Business Center 503-222-3030	Compro Computers Retail Sales 214-490-0158
CALIFORNIA Arlita Pacific Data System 818-599-6077	San Rafael Mac Garden 415-457-1952	Gainsville Computerland 904-371-2840	Wood Dale Nynex Business Center 312-350-9900	Natick Nynex Business Center 508-651-7630	Advanced Systems & Peripherals 314-576-2727	Mac Emporium 212-677-1800	Compumart or MacFriends 503-254-6800	Heath Zenith 214-327-4835
Berkeley Mac Orchard 415-649-2100	San Ramon Nynex Business Center 415-275-9900	Jacksonville Nynex Business Center 904-281-0311	IOWA Marion Iowa Computer Solutions 319-377-8688	Sommerville Cambridge Electronics 617-625-2525	NEVADA Las Vegas Century 28 702-870-1534	Micro Computer Publishing 212-463-8595	PENNSYLVANIA Allentown Nynex Business Center 215-395-0800	Fort Worth Nynex Business Center 817-877-1553
Carson Sun Computers 213-538-8338	Claremont Computer Systems 714-621-4456	Simi Valley Candid Computer 805-522-3823	Washington Iowa Computer Solutions 319-653-5046	West Roxbury Nynex Business Center 617-323-4102	NEBRASKA Omaha Nynex Business Center 402-449-1000	Nynex Business Center 212-682-9110	Gibsonia Nova Micro Systems 412-443-3376	Houston Nynex Business Center 713-964-7300
Cost Mesa Nynex Business Center 714-662-1777	Dublin Dublin Computers 415-829-8644	Sunnyvale Mac Shop 408-736-6227	Waterloo Team Electronics 319-235-6507	West Springfield Nynex Business Center 413-736-3696	NEW HAMPSHIRE Bedford Nynex Business Center 603-644-3620	Computerland of Upstate New York 716-427-0066	King of Prussia Nynex Business Center 215-768-9700	Macinterfaced 713-522-1557
Encino Nynex Business Center 818-981-9720	Fremont Fry's Electronics 415-770-3797	Nynex Business Center 408-773-0400	INDIANA Indianapolis LMB 317-849-5975	Worcester Software & Systems 508-752-8930	Manchester Computer Mart 603-625-1474	Nynex Business Center 212-735-0800	Langhorne Professional Computer 215-860-1653	Nynex Business Center 713-964-7300
Hollywood Mac N Stein 213-462-3598	Irvine Tamco Technology Assoc. 714-725-9119	Computer Plus 408-735-1199	Microcomputers 317-875-9191	MICHIGAN Ann Arbor Appa Business Computers 313-769-2727	Plaistow NEBA Computer Corporation 603-882-1414	Rochester Computerland of Upstate New York 716-475-2201	Philadelphia Nynex Business Center 215-564-1500	Ormsby's Computer 802-476-1414
Los Angeles Nynex Business Center 213-620-1701	Los Angeles Nynex Business Center 213-620-1701	Computerware 408-732-0200	West Palm Beach Nynex Business Center 407-883-2999	Birmingham Nynex Business Center 313-994-6344	Lawrenceville Nynex Business Center 609-882-1414	Syracuse Computerland of Upstate New York 315-446-2700	Pittsburgh Pittsburgh Computer 412-391-8050	VERMONT Barre Ormsby's Computer 802-476-1414
Northridge American Digital 818-366-1104	Oakland Computer Centrum 415-465-4800	Upland Cornice Software 714-985-8323	Georgia Forsythe Computers 219-769-6987	Detroit Heath Zenith 313-772-0416	Paramus Nynex Business Center 201-444-0490	Nynex Business Center 315-445-0794	Springfield Data Systems Computer Center 201-467-2300	VIRGINIA Charlottesville Omni Computer 804-971-6771
Pasadena Di-No Computers 818-795-6674	W. Sacramento University of California 916-752-1999	Van Nuys Computerland 818-997-1107	South Bend Forsythe Computers 219-769-6987	East Lansing Number One Graphics 517-332-6231	Parsippany Nynex Business Center 201-540-0600	Baka Industries 315-522-2242	White Plains Nynex Business Center 914-682-3366	Martinsville Computer Workshop 703-951-3682
San Bernadino AC3 Computer Center 714-381-2383	San Diego Nynex Business Center 619-552-0044	COLORADO Denver CW Electronics Sales/Co 303-242-4001	KANSAS Overland Park Mac Source 913-383-3111	Grand Rapids Remex Corporation 616-942-9800	Secaucus Nynex Business Center 201-392-9200	Springfield Data Systems Computer Center, Inc. 201-467-2300	Williamsville Larry Smith Office Equipment 716-631-8200	Richmond Nynex Business Center 804-788-1200
Salinas Peninsula Office Equipment 408-424-2103	San Bernadino AC3 Computer Center 714-381-2383	Nynex Business Center 303-771-5301	LOUISIANA Metairie Computer Shoppe 504-454-6600	Minneapolis Graphics Department 612-371-0733	Union Nynex Business Center 201-686-1660	NORTH CAROLINA Charlotte Nynex Business Center 704-523-1334	RHODE ISLAND Providence Nynex Business Center 401-751-2060	WASHINGTON Bellevue Sun Computers 206-451-2828
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	CONNECTICUT Hartford Nynex Business Center 203-246-1500	MAINE Portland Harper Computers 207-772-1156	Minneapolis Graphics Department 612-371-0733	NEW YORK Albany Nynex Business Center 518-458-2222	Binders Art Center 704-334-4611	SOUTH CAROLINA Greenville Modern Office Machines 803-281-5400	Seattle Swan Computer 206-622-1100
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	MARYLAND Baltimore Nynex Business Center 301-625-5722	Minneapolis Graphics Department 612-371-0733	Amherst Nynex Business Center 716-833-5400	Raleigh ABI Computer 919-821-1776	TENNESSEE Nashville Nynex Business Center 615-269-6010	Swan Computer 206-622-1100
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	Microcomputer Business Services, Inc. 301-668-2600	Missouri Clayton Forsythe Computers 314-721-4300	Buffalo Computerland of Upstate New York 716-839-5000	Merimph Opus 2 901-683-0117	TEXAS Arlington Hardin Computers 817-572-2775	Sun Computers 206-728-2828
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	Beltsville HLA 301-345-1123	Creve Coeur Forsythe Computers 314-567-0450	Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	GA Gaithersburg Nynex Business Center 301-670-4031	Endwell Nynex Business Center 607-754-9120	Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	ILLINOIS Bloomington T2 Computers 309-829-6806	Hicksville Nynex Business Center 516-933-1881	Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	MASSACHUSETTS Acton Tech Computer Store 508-263-3600	Ithaca Baka Industries 607-257-2070	Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	Boston Nynex Business Center 617-421-9180	St. Louis Nynex Business Center 314-241-8141	Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	Burlington Nynex Business Center 617-424-0969		Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559	FLORIDA Ft. Lauderdale Inacom Computer Center 305-492-8737		Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608-271-1000
San Bernadino AC3 Computer Center 714-381-2383	San Bernadino AC3 Computer Center 714-381-2383	Computerware 415-323-7559			Buffalo Computerland of Upstate New York 716-839-5000	Nynex Business Center 919-876-8114	UTAH Cincinnati Nynex Business Center 513-721-7820	Waconia American TV 608

Results: Winning Trades

\$155,248.44 profit in 4 weeks.



If you didn't make big profits during this rally, you need our software!

The Right Time™ computerized trading system was developed by an expert portfolio manager for his own personal use. Over the last nine years of in-market use the software has been perfected and made easy to use. Now it's available for any smart trader who wants to make quick profits from quick decisions.

Not only is The Right Time™ the best decision support system ever devised for traders, it's the only software that analyzes volume/price, support/demand, and global market trends - all at the same time.

Amazingly Precise.

The Right Time™ programs run on IBM (and compatible), Apple II and Macintosh personal computers. The software is easy to use, amazingly precise, and very, very clear in its signals.

It's also fast. You can update all of your stocks, commodities, indices or mutual funds from Dow Jones in less than five minutes per day.

What's more, you can play "What If" games with individual stocks, commodities, indices, funds or options with results in about one second.

Results: Winning Trades.

There are seven Right Time™ programs available to help you make the right decisions at the right time.

Stock Program: "The program is amazing. Profitable trades have developed out of

nowhere!" M.C., brokerage firm vice president.

Index Program: "Computer whiz finds program for success. This program really works." A.G. financial columnist.

Futures Program: "Very profitable with four out of five winners. Paid for itself the first trade." B.L., investment advisor.

Mutual Funds Program: "Accurately picked my last seven profitable trades. I couldn't trade without it." L.S., individual investor.

Stock Program/Long Term: "Exactly what I've been waiting for from T.B.S.P. Perfect for our more conservative clients." G.M., stockbroker.

For More Information.

Call (714) 548-2874 for our free twelve page brochure. Each program costs \$449, any two \$699, any three \$999, any four \$1299 or all five for \$1499. We also have working demos for just \$49 (each) - includes manual.

Now Available - The Right Time-Day Trading Program/Futures and The Right Time-Day Trading Program/Index priced at \$549 each or both for \$899.



T.B.S.P. INC.
The Better Software People
620 Avocado Ave.
Corona Del Mar, CA 92625
(714) 548-2874

All programs not available on all computers.

Circle 135 on reader service card.

MACWORLD

HOW TO CONTACT MACWORLD

Subscription Services

For subscription service questions, call 800/234-1038, 800/525-0643, or 303/447-9330, or write Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. To place new orders, call 800/642-9606.

Macworld in Microform

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346, 313/761-4700.

Back Issues of Macworld

Write to: Back Issues of Macworld, 144 Townsend St., San Francisco, CA 94107; \$6 per issue (\$20 overseas). Prepayment in U.S. funds necessary.

Macworld Editorial

Mail or Courier: Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.

AppleLink: Macworld1 Connect: Macworld1
CompuServe: 70370, 702 Fax: 415/442-0766

Letters to the Editor All your written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to: Letters to the Editor.

Questions and Quick Tips Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to: Quick Tips, Lon Poole.

Consumer Advocate Been burned? Really steamed? Direct your concerns (by mail or electronically) to: Conspicuous Consumer, Deborah Branscum.

New Products and Updates Direct press releases and product announcements (by mail or electronically), and shrink-wrapped software upgrades (by mail or courier) to: New Products Editor.

Editorial Calendars For a copy of Macworld's editorial calendar, direct requests (by mail) to: General Information, Editorial Dept.

Reprints and Permissions For written permission to quote or reproduce material from Macworld, direct requests (by mail) to: Reprints and Permissions, Editorial Dept.

Writing for Macworld Please do not send us unsolicited manuscripts. If you're interested in writing for Macworld, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to: Writer's Guidelines, Editorial Dept.

October 1989, Volume 6, Number 10

Macworld (ISSN 0741-8647) is published monthly by IDG Communications, Inc., 501 Second Street, San Francisco, CA 94107. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$16 per year from Canada and Mexico; add \$16 per year for surface mail or \$95 per year for airmail from all other countries. Second-class postage paid at San Francisco. POSTMASTER: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80323-4529. For dealer inquiries, call 800/621-5461, in California 800/521-8455. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505.

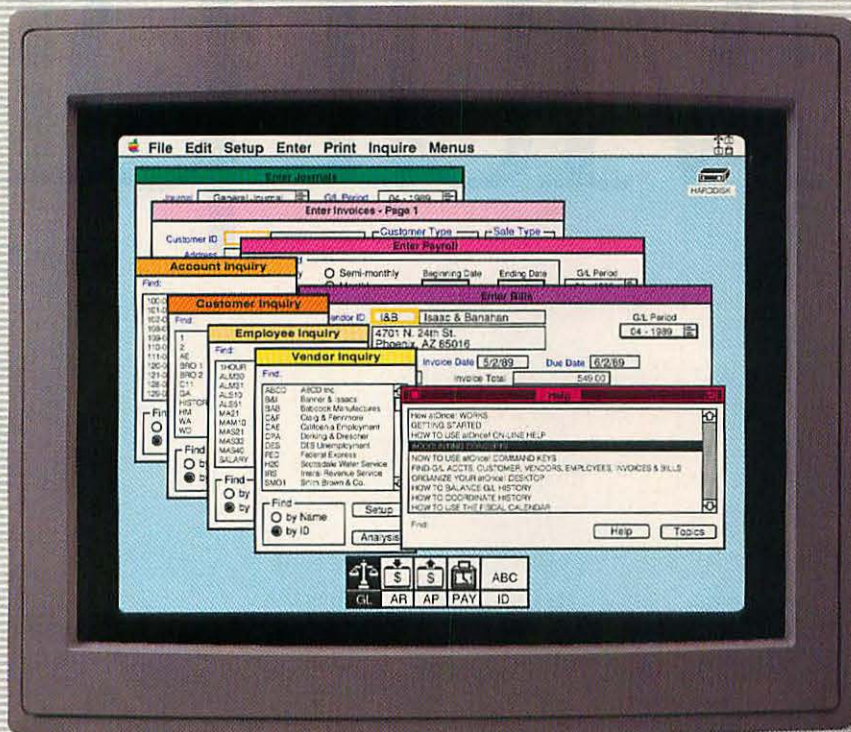
Macworld is a publication of IDG Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. APPLE, the APPLE LOGO, MAC, MACINTOSH, and MACWORLD are registered trademarks and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America. Copyright 1989 IDG Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 120 computer publications in more than 40 major countries. Fourteen million people read one or more IDG Communications publications each month.

"Finally, the Macintosh has powerful yet simple accounting Software..."

New Accountant Magazine
February 1989

"I've died and gone to heaven...this is the accounting program I've been waiting for."
Vicki Lamparis President, Cactus Computer Services
Published Reviewer: MacGuide & MacUser Magazines

High-Speed Small Business Accounting



- ✓ **Seamless Integration**
All modules can be open simultaneously. Data instantly updates throughout.
- ✓ **Designed for the 1st time user or the accounting pro**
Optimized for fast set up, quick learning curve and high-volume productivity.
- ✓ **Customizable financial reports**
User has complete control over the flexible financial reports. atOnce! can produce to meet unique managerial needs.
- ✓ **Complete On-line "Help" system**
Command "Click" on any field or button instantly opens "Help" dialog with instructions and exclusive "Rules-of-Thumb".
- ✓ **Instant "Look-up" and "Find"**
All accounts, customers, vendors and employees can be instantly found alphabetically or numerically. All look up windows can be open simultaneously!
- ✓ **Customizable Forms**
Now you can change fonts, styles, sizes, names and graphics on your checks, invoices and statements.
- ✓ **MultiFinder™ compatibility with true background operation**
Performs true background operations including printing the report queue.
- ✓ **Optional Mouseless Operation**
High-speed data entry with keyboard equivalents for hands-on operation.

atOnce!™ represents the next generation in accounting software. So easy to learn, the majority of business managers will be completely at ease doing their own accounting. So fast and flexible, professional accounting and bookkeeping firms can now use the Macintosh® as their platform of choice for handling numerous companies and volume data.

All modules (and up to 26 periods!) can be open simultaneously! Use atOnce!'s built-in financial

reports or customize your own. Queue your reports and batchprint them --in background! Full, context-sensitive help means "click" on any field, any button, anywhere, for instant "Help" and "Rules of Thumb". Use the mouse or keep your hands on the keyboard. We're talking productivity here, and that means power...especially when you can do it all...atOnce!™

Call for sales information
and your atOnce! demo disk
(\$9.95 postage & handling)

1-800-622-4436

Layered Inc.
529 Main Street • Boston, MA 02129
617-242-7700 • Applelink:D0254

LAYERED INC.™

The First Family in Macintosh Accounting

Wanted For Murphy

According to Murphy's Law, if a floppy disk can fail, it will. Usually after you put a 90-page document on it.

That's why you should use 3M diskettes. They're built to make things go right for a change. With our

exclusive formulation and Mark Q Manufacturing Process, they break Murphy's Law millions of times a day. Year in and year out.

And our engineers have taken the same fanatic approach with all our

Breaking Murphy's Law.



data storage products: diskettes, data cartridge tapes, computer tapes and optical disks. So when you get

down to it, there are only two choices.

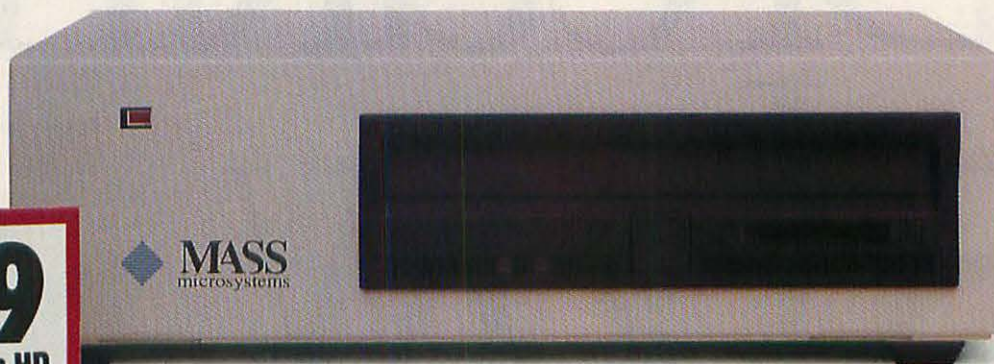
Use 3M diskettes and break Murphy's Law every day of the week. Or use something else. And give Murphy's Law a chance to break you.

For more information about diskettes, call 1-800-888-1889, ext. 10.

Circle 402 on reader service card

3M

Dealer.



\$1899
45MB Removable HD

Deal.



\$849
45MB Removable HD

We don't mind telling you that the Mass Microsystems™ 45MB Removable Hard Drive is currently the best selling removable on the market. We also don't mind telling you that it features a SyQuest™ mechanism, excellent driver software and an average access speed of 25ms. We are even willing to tell you that they're available at your favorite dealer at a list price of \$1,899.

Or you could buy a 45MB Removable Hard Drive from Ehman. It has the same SyQuest mechanism, excellent driver software, and the same access speed. Plus, the Ehman Removable has a one year warranty on the SyQuest mechanism and two years on all other parts and software. And it also comes with everything you need including cables.

Oh, and by the way, Ehman is sold direct for just \$849. That's a difference that makes a difference.

Since 1985 Ehman has been adding value to the Macintosh® with a broad line of quality peripherals, and backs all its products with a 30 day, hassle free, return policy.

Call us at 1-800-257-1666 and order your 45MB Removable Hard Drive from Ehman for \$849. A real deal. Or get one from a dealer and pay an extra thousand bucks.

But don't say we didn't tell you.

 **Ehman**
Quality Peripherals for Added Value
1-800-257-1666

MAC BULLETIN

INDUSTRY NOTES

Apple Interface Suit Narrowed

A San Francisco court has ruled that 1985 license agreements between Microsoft and Apple invalidate most of Apple's copyright infringement claims in its suit against Microsoft and Hewlett-Packard. Other look-and-feel questions, and the basic issue of copy-righting interface design, remain to be decided.

Apple Cuts SE Prices, Adds FDHD

Apple recently cut the suggested retail price of all 68000-based SEs by \$300 and added the 1.4MB FDHD SuperDrive to the SE models, which had previously had 800K drives. The FDHD drives permit the transfer of data files between Macs, DOS machines, PS/2s, and Apple II systems, all on the same floppy disk.

Micron to Distribute Memory through Microamerica

Micron Technology one of the few U.S. makers of DRAM chips for general sale, has begun selling its line of memory upgrades through Microamerica. The products include the Xceed line of memory boards for Macs.

Softsel to Distribute Nodem LAN Interface

Softsel Computer Products has agreed to distribute Adaptec's Nodem LAN interface unit, a device for linking Macs to Ethernet LANs. Because the Nodem connects to the SCSI port, it can support all Macs from the Plus up.

The Source Hangs Up

CompuServe Information Service has purchased The Source Telecomputing. The online messaging and database giant has shut down The Source and incorporated its 53,000 customers. At press time, CompuServe was deciding which Source databases it would provide access to.

300-dpi Color Printers Start Under \$7000

Seiko Instruments U.S.A. announced its QD-5500 series of single-user and network 300-dpi printers, **which range from low-end monochrome systems to three- and four-color devices** in both single-user and network print-serving models. A monochrome, single-user printer with 1MB of RAM is priced at \$6995. A four-color network server version that contains 6MB of RAM and can output letter- or tabloid-size paper will sell for \$13,995. The printers include 35 outline fonts and are compatible with 32-bit QuickDraw. Single-user versions were slated to ship in September, with network versions to follow in October. For more information, call Seiko Instruments at 408/922-5800.

MultiSync Monitors Connect to Macs or PCs

NEC Home Electronics (U.S.A.) has introduced three **monitors that can work with either the Mac II family or with IBM PCs and compatibles**. The \$3699 MultiSync 5D is a 20-inch color display that works with VGA, 8514/A, or Mac II controllers at resolutions up to 1280 by 1024. The \$1799 MultiSync 4D is a 16-inch monitor that works with the same controllers at resolutions up to 1024 by 768. The \$349 MultiSync GS2A is a 14-inch gray-scale display. NEC expects to begin shipping all three monitors in September. For more information call NEC at 312/860-9500.

PLI and Xyxis Ship Erasable Optical Drives

Peripheral Land Inc. (PLI) and Xyxis Corporation have both begun shipping erasable optical disk drives. PLI's device, called Infinity Optical, is based on a Sony magneto-optical drive. Infinity Optical's media can be formatted in sectors of either 512 bytes or 1024 bytes. The 512-byte format **stores 573MB on both sides of the disk and has an average access time of 75ms**. The 1024 format **stores 625MB with a 90ms access time**. A one-drive version has a suggested retail price of \$5495, and a two-drive configuration lists for \$10,995.

The Xyxis drive, called the XY600RW, **stores up to 600MB with an average access time of 61ms**. It lists for \$4995. For more information call PLI at 415/657-2211, or Xyxis at 612/944-8288.

Maynard Enters Mac Market with Three Tape Drives

Maynard Electronics Corporation, a longtime player in the IBM PC backup arena, **has announced three tape drives for the Mac**. The MaynStream 60, 150, and 2200HS can store 60MB, 150MB, and 2200MB, respectively. All three come with software that lets users choose from a variety of options, including using Boolean logic to define what will be backed up. Now shipping, the 60MB drive lists for \$1595, the 150MB model for \$1895, and the helical-scan 2200MB version sells for \$7495. For more information, call Maynard at 407/331-6402.

Interleaf Slashes Price of Publishing Software

Interleaf has reduced the price of Interleaf Publisher, its text-and-graphics publishing software, **from \$2495 to \$995**. Designed for the Mac II, Interleaf Publisher includes word processing, graphics manipulation, and automated desktop publishing capabilities. Interleaf is working on a version for 68030-based Macs. For more information, contact Interleaf at 617/577-9800.

Microsoft Office to Ship on CD ROM

A version of The Microsoft Office—a bundled set of the latest versions of Excel, Word, PowerPoint, and one Microsoft Mail node—should now be **available on CD ROM with all the documentation in HyperCard format** and with special search algorithms to facilitate finding information. The tutorials take advantage of CD ROM's capabilities by, for example, using Farallon ScreenRecorder tapes in
(continues)

INDUSTRY NOTES

Mac Consultants to Enforce Standards

The Macintosh Consultants Network is formulating plans to ensure that its members follow the Network's code of ethics and is establishing procedures to resolve disputes between consultants and their clients. For more information, call MCN at 206/453-2729.

Symantec: Q1 in the Black

Symantec closed its first quarter after going public last spring with profits of \$1.24 million on income of \$11.2 million. This compares with a loss of \$490,000 on income of \$8.8 million for the same period in 1988.

GCC Sets Up Direct Sales Channel

Mac hardware pioneer GCC Technologies has launched a direct sales campaign to market its peripherals through mass catalog mailings. Under the new program GCC is offering overnight shipping for \$9, a 30-day "no questions asked" money-back guarantee, extended business hours, and longer warranties. The company has also added a toll-free number (800/422-7777) for orders and free technical support.

MacGuide Magazine Closes

The August issue of Denver-based MacGuide was the magazine's final issue. Last spring, the quarterly Mac product catalog had attempted to relaunch as a vertical market-oriented monthly.

SuperMac to See Light of Day

SuperMac Technology has signed a national distribution agreement with ComputerLand. ComputerLand has 818 stores, and the two companies expect sales of SuperMac products to reach \$10 million the first year.

MGMStation Changes Hands

Micro CAD/CAM, the publisher of MGMStation, has been absorbed by Aura Systems, a firm specializing in electromagnetics, electro-optics, microwave technology, and expert systems. MGMStation CAD and MGMStation CAD/CAM are being renamed auraCAD and auraCAD/CAM, respectively. For more information, contact Aura Systems at 213/337-1406.

place of static screen shots to demonstrate features in action. The CD will also come packed with clip art and Excel templates from the Heizer catalog. The Microsoft Office lists for \$949; if each product were bought separately they would run about \$1300. This offer will be available until the end of the year. For more information, contact Microsoft at 206/882-8088.

PageMaker Add-on to Simplify Database Publishing

A new product developed by Aldus employees will automatically assign style attributes and other formatting to tab-delimited text files as it imports them into PageMaker. The new program will be able to **flow information from spreadsheets and databases into PageMaker designs** and will be able to merge data fields to produce form letters, mailing labels, and other complex documents.

Aldus is not publishing this product. At press time, the publisher had not set a name for the new product, but expected to ship it in September. It will probably list for \$149 and come with a selection of templates. For more information contact Benware at 206/547-9623.

Now with Twice the Security

ASD Software is preparing two products to provide security to Mac users and administrators. Version 2.0 of FileGuard adds password protection for accessing files and volumes; creating, copying, and changing files; copying or launching applications; and other controls. FileGuard 2.0 alters low-level SCSI information, application code, and files so that **a protected hard disk remains secure even when attached to a different Mac** or started up from a floppy.

A hard disk backup program called Twins will maintain a mirror image of one hard disk on another hard disk, making a backup available immediately in case of a crash. Twins can be set to run at shutdown, at intervals, or in real time. ASD plans a later version of Twins that will add the ability to keep two mirror-image backups, as mainframe computers generally do.

Both products should be available now. FileGuard 2.0 will list for \$249, and a network version is under development. At press time, Twins' price had not been set. For more information, contact ASD Software at 714/624-2594.

1stAid Software's Second Line of Defense

The publishers of 1stAid Kit and Anti-Virus Kit are planning two new disk- and file-protection products. Complete Undelete keeps a record of the directory path for up to the last 500 deleted files, allowing you to retrieve deleted files. A single CDEV manages installation, space allocation, and recovery, and **a special feature makes the drive delay overwriting deleted sectors.**

Sector Collector helps recover data from disk sectors that have gone bad and then collects bad sectors into a dummy file, preventing the drive from trying to write to them again. This saves the user from having to reinitialize a hard disk after a sector goes bad.

Both Sector Collector and Complete Undelete should be available now for \$49.95 each, or bundled with 1stAid Kit for \$159.95. The bundled set will integrate the two products into the 1stAid Kit shell. For more information, call 617/783-7118.

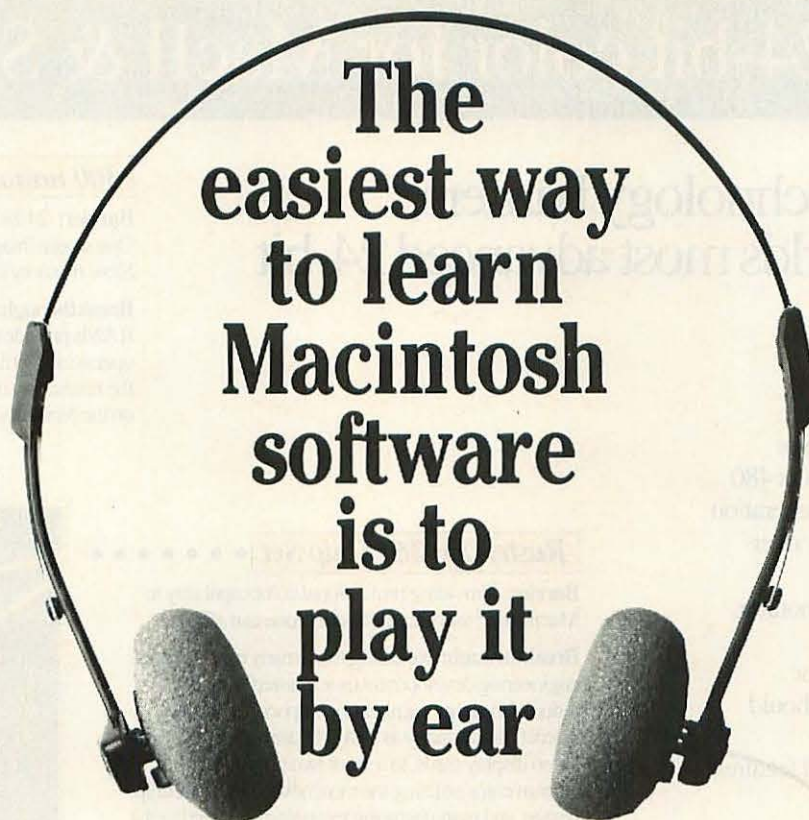
Adding It Up

Version 2.0 of Symantec Utilities for Macintosh (SUM), **which should be available now, provides a still-simpler shell** and simplifies the series of questions that walk you through recovering a disk. The new version also integrates into the SUM shell a backup program written by the same company that wrote Redux, and an encryption program.

SUM 2.0 will list for \$149.95. SUM 1.0 owners will be able to upgrade for \$39.95. For more information, contact Symantec at 408/253-9600.

Microsoft Fixes Excel 2.2 Bug

A bug in early copies of Microsoft Excel version 2.2 causes **formulas cut from one cell and pasted into another cell to sometimes fail to update references to other cells.** The buggy version's creation date and modification date are both May 5. (To check this, in the Finder select Excel on the locked, unaltered original floppy—don't use a working copy—and choose Get Info from the File menu.) Microsoft will send the free bug-fix, whose modification date is May 19, to registered owners who request it by calling product support at 206/454-2030. ■



The fastest way to learn software is to have an expert sit beside you and talk you through the program, step by step. With your hands on the keyboard, trying each new skill as it's explained, learning is a snap.

So Personal Training Systems gives you that expert—on an audio cassette. Each 90-minute tutorial contains the cassette, example files on a disk, and a quick reference card. It's like having your own private tutor . . . only this one works anytime, anywhere, and doesn't charge by the hour.

In addition to training on the Macintosh itself, tutorials are available for Microsoft Excel, Word and Works; Aldus PageMaker and Persuasion; Adobe

Illustrator 88; and HyperCard. Since we offer beginning, intermediate and advanced levels for each software program, there's sure to be one that meets your needs.

All our tutorials are unconditionally guaranteed. You'll learn how to use your Mac or favorite software program—without opening a book or attending a class—or your money back.

So if you're looking for a fast, convenient, affordable way to learn, contact Personal Training Systems by calling 1-800-TEACH-99, or mail in the coupon below. Because we know you have better things to do with your time.



☐ YES, please send me information on Personal Training for:

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> Macintosh | <input type="checkbox"/> FileMaker |
| <input type="checkbox"/> Excel | <input type="checkbox"/> HyperCard |
| <input type="checkbox"/> Word | <input type="checkbox"/> Persuasion |
| <input type="checkbox"/> PageMaker | <input type="checkbox"/> Works |
| <input type="checkbox"/> Illustrator 88 | |

Name _____

Company _____

Street _____

City _____ State _____

Zip _____ Number of Macs _____

PERSONAL TRAINING SYSTEMS

P.O. Box 54240 ■ San Jose, CA 95154 ■ 408-559-8635

800-TEACH-99

MW1089

RasterOps 24-bit color for MacII & SE/30.

How we broke technology barriers, to deliver the worlds most advanced 24-bit color board.

The new RasterOps ColorBoard 264 rewrites the price book for 24-bit color.

Combine it with Apple's® 13" color monitor, or any Mac-compatible 640 x 480 monitor. You get advanced, third-generation 24-bit color, allowing you to display over 300,000 colors simultaneously.

If you have an Apple 13" color monitor, then you are ready for 24-bit color.

If you are going to buy a 13" color monitor, this is the only board you should consider.

Why? For the quality design and features described in this ad.

And for real, 24-bit color.

24-bit systems let you work with over 16 million colors simultaneously. This is the most accurate way to produce true-to-life colors. With 24-bit color, you can display and manipulate photographic quality images, to create stunning presentations and documents.

24-bit color unlocks the potential of desktop publishing, presentations, and video.

Apple's 32-bit QuickDraw™ is the standard.

Now, we have made it affordable.

RasterOps 264 Chip Set

Barrier: Providing professional color capability to Macintosh® users at a price everyone can afford.

Breakthrough: Resulting from many man-years of engineering development time, RasterOps has reduced the large number of components needed (sometimes as many as thirty) to produce 24-bit color video display cards, to a set of two proprietary custom chips utilizing the most advanced VLSI chip design and manufacturing technology. Selecting the most advanced high density CMOS chips throughout, this board has the lowest chip count of any 24-bit card in the industry. The fewer the chips, the less the heat, and the more reliable the product.

SetGamma and DirectSetEntries

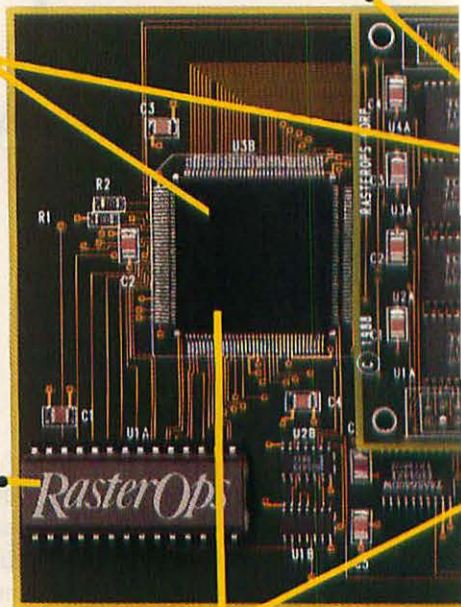
Barrier: To see the effects of color corrections in real time, as you make adjustments to gamma, brightness and contrast.

Breakthrough: Your ColorBoard 264 directly supports Apple's DirectSetEntries and SetGamma QuickDraw instructions in hardware. Instantly see the effect of changes to your color image. You can watch the color tones change as you move the mouse. Without this dynamic support, you have to guess at the color correction, enter the new value, and wait for the new screen to repaint. No waiting with the 264.

300 nanosecond Bus Cycle

Barrier: 24-bit color takes a lot of memory. One screen image can take up to 900,000 bytes. Slow memory slows your screen draw time.

Breakthrough: These 1 Megabit Video RAMs provide more memory in less space, and operate at 100 nanosecond speeds, providing the fastest possible read-write cycles available on the Macintosh, at 300 nanoseconds.



Color Modes

Barrier: The color mode of the display (2, 4, 16, 256, or millions) affects the speed of your work. When you are word processing you want documents to scroll fast.

Breakthrough: With RasterOps' custom Very Large Scale Integration CMOS chips, all color modes are available including 2, 4, 16, 256, or millions of colors. You decide what color level you need and when you need it.



Both the Mac II family and SE/30 version of the RasterOps ColorBoard 264 are fully compatible with Apple's 32-bit Color QuickDraw. RasterOps is an Apple licensed supplier of the Apple 6.0.3 System Software, including 32-bit color QuickDraw. A copy is shipped with each ColorBoard 264.

All registered and unregistered trademarks are the sole property of their respective companies.

Dual Oscillators

Barrier: With the onrush of multimedia and video applications, our customers don't want to invest in a board that locks them out of video.

Breakthrough: Two separate oscillators. The left to support Apple's 13" color monitor at a resolution of 640 by 480, and the right oscillator to output 8-bit gray scale video directly to VCRs or TV monitors. It will also output RGB NTSC video for external encoding in 24-bit True Color. When you need video, (and it's coming fast), you're ready.

DAC 473

Barrier: Convert a 24-bit image from digital values in memory to analog signals of Red, Green, and Blue, using the least amount of power and board space.

Breakthrough: We are the first to use this advanced, DAC (Digital to Analog Converter) 473. The single, low power chip does a better, faster job, and replaces 3 chips. If you want the best, ask for the DAC 473.

SMOBC Fabrication

Barrier: The accepted, easy way to manufacture a board is wave soldering. But this doesn't allow efficient use of robots, and doesn't create a "Clean" board.

Breakthrough: We use an advanced, Solder Mask Over Bare Copper board fabrication technology and surface mounting of components through efficient, dependable robotics. Note the clean, simple appearance of this board. When you turn the board over, you will see a smooth golden surface, the trademark of a SMOBC board. It costs more and requires a greater design effort, but the benefit to you is a more reliable board.

Auto Sensoring

Barrier: Allow user to change monitors and frequency without setting a switch, changing an oscillator, or making a selection from the control panel.

Breakthrough: Circuitry that automatically senses which monitor you are using and switches automatically from 66.7 Hz to 30 Hz. You just plug in your Apple-compatible monitors, the board will take care of the necessary adjustments.

Bus Buffering

Barrier: The NuBus transmits power spikes and bus noise. These can destroy data as well as circuitry on the display card. Spikes can also cause pixels to trip, causing spots on the screen.

Breakthrough: We designed sophisticated bus buffering circuitry to isolate the hostile NuBus environment from critical components on the board, protecting your video investment, and your data.

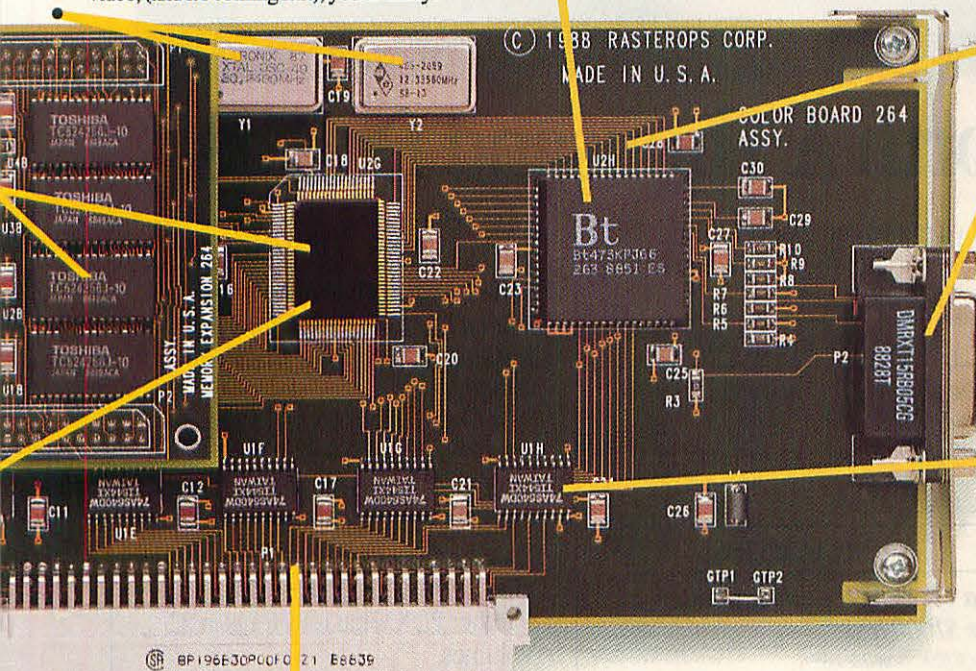
Power Draw

Barrier: Power and heat. Your board draws its power through the NuBus. Apple specifies a maximum of 2.1 Amps per slot. Many boards require over 4.0 Amps. Amps mean heat, which is deleterious to your Macintosh, and a drain on the power supply.

Breakthrough: Through the extensive use of CMOS circuits, VLSI parts that replace multiple parts, low chip count, and 5 mil copper traces, the RasterOps ColorBoard 264 needs less than 1.0 Amp. Your system runs cooler. You can use other slots without fear of overloading your power supply.

RasterOps
Literature
Package

For your nearest dealer
and literature on the most
advanced Macintosh
graphics products, call:
Information Hotline:
1-800-952-6300. Dept.X24



RasterOps

2500 Walsh Road, Santa Clara California 95051 USA

AUSTRIA - Power Publish - (1) 50 56 411, AUSTRALIA - Mitsui - (2) 452 0452, BELGIUM - Megatek - (41) 52 08 69, CANADA - McKenzie Brown - (416) 821-9222, FRANCE - RasterOps - (1) 30 40 89 57, GERMANY - Maginus - (0711) 72 81 60, GREECE - L-Cube - (1) 36 14 509, HOLLAND - Positronika - (040) 41 63 55, ITALY - Infograf - (02) 9522 724, JAPAN - Nihon Binary - (03) 407 9751, MARUBENI - (03) 507 4523, NORWAY - Software Plus - (02) 39 46 96, PORTUGAL - MacIndex Informatica - (39) 21221, SINGAPORE - Chartered Electronics Ind - 779 7621, SPAIN - HSC - (91) 255 79 00, SWEDEN - Software Plus - (11) 18 12 70, SWITZERLAND - Comac - (056) 20 13 55, U.A.E. - Arab Business Machines - (971) (4) 233 438, U.K. - Gomark Limited - (01) 731 7930. All registered and unregistered trademarks above are the sole property of their respective companies. Specifications and features subject to change.



Free Fonts Worth A Thousand Dollars

IF ALL PRINTERS WERE EXACTLY ALIKE... THEN HOW WOULD YOU TELL THE DIFFERENCE?

It's true. La Cie's Panther PDX, Qume's CrystalPrint Publisher and Jasmine's DirectPrint are the same printer. We agree that it's an unbeatable printer for today's desktop environment. That's why we're selling it.

But don't take our word for it, take MacWEEK's, MacUser's and La Cie customers.

MORE PRINT QUALITY

"Tom Elliot, editor in chief of Research Magazine, liked the printer so much that he recommended it."

Clay Andres, MacWEEK, June 1989

The Panther PDX is an ultra high-speed PostScript-compatible printer that brings extra value to the desktop and occupies less space.

Whatever they've got in them, it sure works."

Tom Elliot, Editor in Chief, Research Magazine
MacWEEK, June 1989

The advanced Casio LCS engine produces blacker blacks, finely detailed type characters and halftones at 300 dpi resolution.

All your jobs come out crisp and clean, because there are no scan lines like the LaserWriter output.

MORE PRODUCTIVITY

"The time difference was amazing."

Len Kaufman, Avionics System Manager,
Naval Aviation Depot
MacWEEK, June 1989

MORE FOR LESS

"La Cie sells the same printer for \$1000 less."

MacWEEK, June 13, 1989

COMPANY	PRODUCT	PRICE
La Cie	Panther PDX	\$3,499*
Qume	CrystalPrint	\$4,499
Jasmine	Direct Print	\$3,495
Abaton	Quickstep	\$4,495

***Includes \$1,000 package of fonts from Casady and Green.**

La Cie's Panther PDX uses a high-speed Weitek RISC chip. This high-speed RISC chip makes the Panther run 5 times faster than the Apple's LaserWriter IINT and 40 times faster when printing mixed text and graphics. The Panther speeds past the LaserWriter IINTX—even with a hard drive. In fact, the Panther PDX is one of the fastest printers on the market today.

MORE FOR YOU

"Then I saw the Panther PDX at the La Cie booth and bought it with \$1000 worth of fonts for \$1000 less."

Len Kaufman, Avionics System Manager
MacWEEK, June 1989

La Cie is even including \$1000 worth of FREE fonts from the Casady and Green library for all customers who purchase the Panther PDX. That is 84 fonts in 22 volumes.

THE PANTHER PDX... WILL MAKE THE DIFFERENCE

Order your Panther PDX now including FREE fonts worth \$1000!

**Call us now.
1-800-999-0143**

LaCie LTD.

16285 SW 85th, Bldg. 306,
Tigard, OR 97224
(503) 684-0143
FAX (503) 624-0919

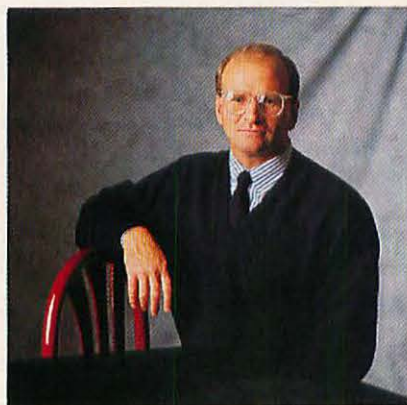
Prices shown are cash prices and do not include shipping. Add 3% for VISA, Mastercard, 5% for American Express. Add 10% for rush handling. La Cie and Panther PDX are trademarks of La Cie, Ltd. LaserWriter is a trademark of Apple Computer. Qume and CrystalPrint are trademarks of Qume. Jasmine and DirectPrint are trademarks of Jasmine Technologies, Inc. Abaton and Quickstep are trademarks of Abaton. Casady & Green is a trademark of Casady & Green. Prices and specifications shown are subject to change without notice.

Circle 145 on reader service card

Desktop Publishing Update

Making progress
despite disappointments

by Jerry Borrell



It has been a long six months since we began producing *Macworld* through electronic means. A time during which we have matured in our use of the tools and learned about the limitations of electronic publishing technology. Our travails have been made more difficult by the evolution of the new design we put in place in the May issue. The type was too small in places, and our pages at times seemed distracting due to overuse of different page elements to break up the dense content of the articles. Our designers needed time to learn to use the power of page composition software effectively.

We felt all of the problems, much more than most of our readers. In fact, the lack of reader response to our changes was—deafening. Still, we knew our work was being observed. *Elle*, a magazine with our size format, even sent a team of designers to study how we work. Our sins may have been multitudinous, but the onlookers were asking how we were making our mistakes.

Today we are at a stage where designer Dennis McLeod brings full page proofs (minus illustrations) to content and approval meetings with the editorial staff. We view layouts of various sections of the magazine at an early stage, when it is

possible to make changes fairly painlessly. Our designers' demand for LaserWriter IINTX output has outgrown the one machine in the department. We use our QMS ColorScript 100 to evaluate color type, illustrations, even cover concepts. We've installed the first of the 24-bit color boards from Super-

Mac Technology that drive Apple's 13-inch monitor, and we are testing the under-\$1000 board from RasterOps that does the same. Our copy editors are even being equipped with full page displays, so they can make changes to electronic forms of manuscripts.

Just in time for our September issue we implemented a beta version of the 24-bit

color extension for PageMaker, called PageMaker Color Extension. Soon thereafter, swearing could be heard at odd hours, bouncing off cubicle walls. Certainly the extensions were a boon in allowing us to specify tint (mechanical or process) colors directly within PageMaker, and in potentially saving us time and money in the stripping phase of page composition, but we ran into problems. A number of pages within the first set came up missing color in type and images. At times, entire pages disappeared during processing cycles on the Linotronic. One particular set of tricky issues revolves around color type that's knocked (reversed) out of a black background, requiring a workaround in order to make an effective trap for the type.

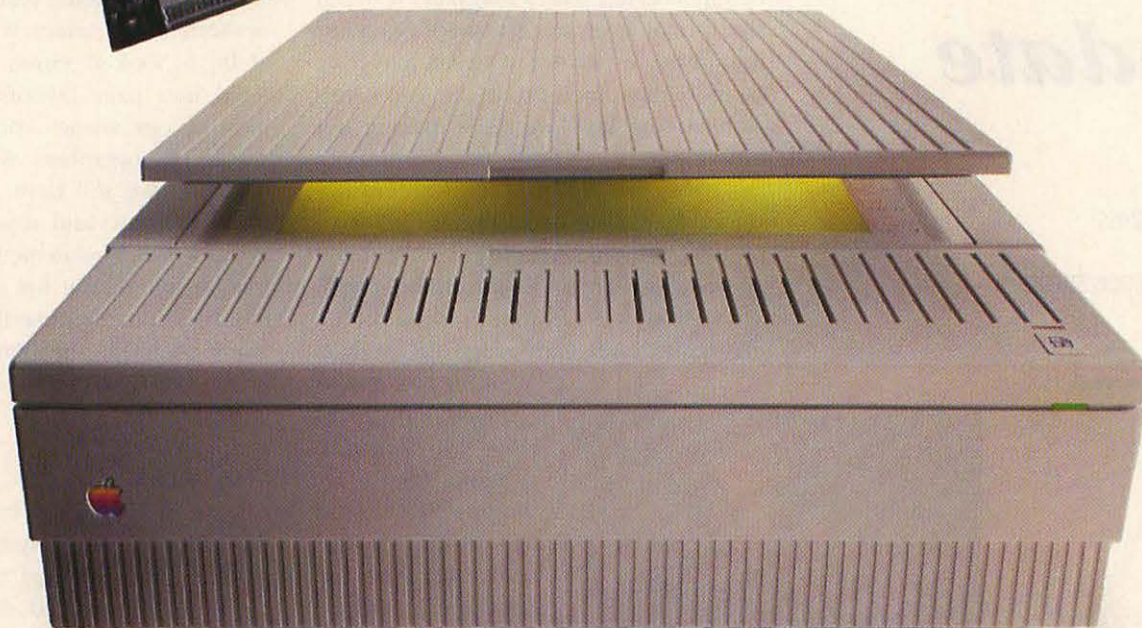
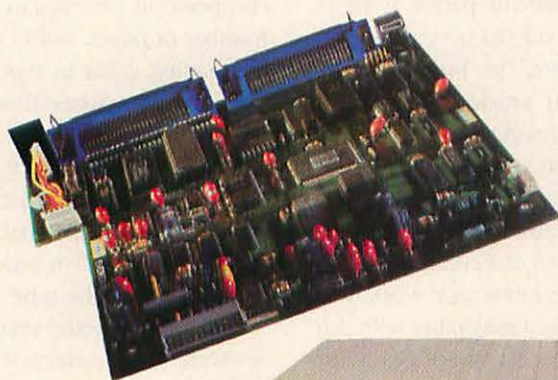
We've had better results with the Barneyscan Slide Scanner, which gives us the ability to look at 35mm images incorporated into page layouts. Unfortunately, most of our images come from professional photographers who use 125mm film, and we still have no way to scan those in-house and must rely on traditional service bureau methods (a Crosfield laser scanner). But for departments and news sections that use the lower-quality transparencies, the Barneyscan offers new potential to graphic artists evaluating page designs.

VISIONARY

Another long-awaited event, our test of the Scitex Visionary system, finally happened. The appointed day came and a group of us trooped down to Balzer/Shopes, a local color-separation supplier, to test the future. Truth to tell, it ain't what it's cracked up to be. But let's start at the beginning. I have been looking for one source that can produce type, continuous-tone separations, mechanical color separations, and separations of graphics files (PICT, EPS). Currently we have these things done at four separate places. In addition, I dream of a single, reliable source of these materials. No more standing in line waiting for some quarterly newsletter to roll off the Linotronic at a service bureau. DTP doth strange bedfellows make.

(continues)

8-bit upgrades invade Apple.



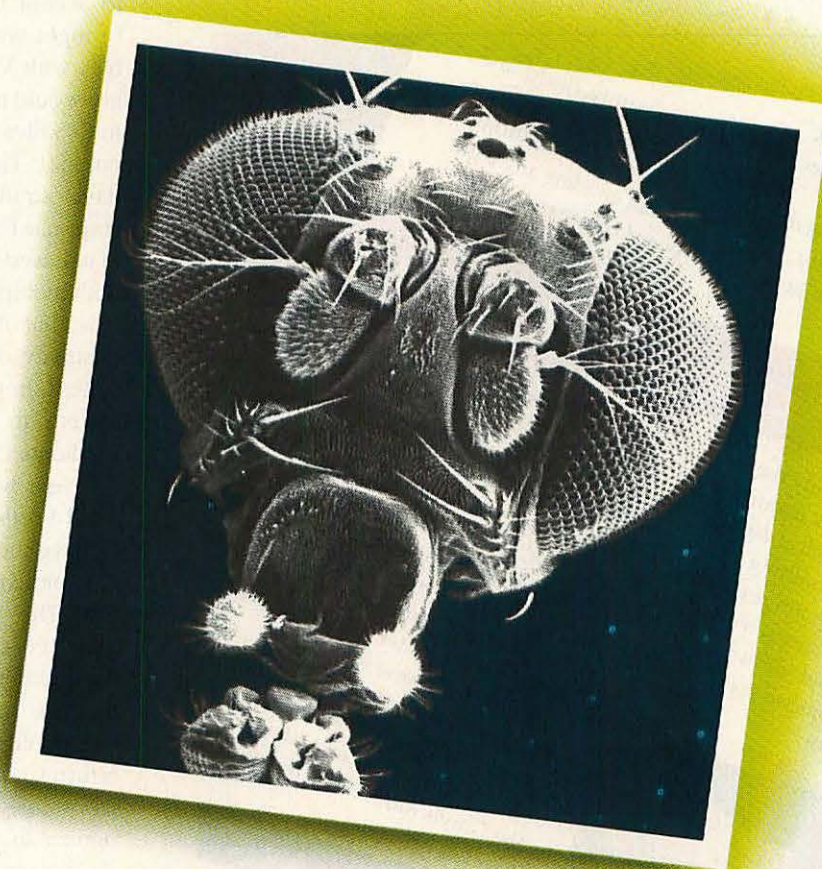
It takes less than thirty minutes for an 8-bit Abaton Upgrade to invade your Apple scanner. And once the upgrade is in place, you'll see more detail in your scanned images. Details that won't show up on a 4-bit scanner.

Like subtleties in shading or gradations. Because with Abaton's 8-bit Upgrade, your Apple scanner can read 256 shades of gray (versus the 16 shades you currently get). So your black-and-white photographs

look as good on your computer as they do on paper. And you'll see more of the richness and subtlety of the original photo when the scanned image is printed on a phototypesetter. Which means that you can use your scanned images as final art.

The Abaton 8-bit Upgrade is completely painless. There's no dragging your scanner down to the local store. You simply place the order, and within 48 hours a technician will call to schedule the thirty-

Get all the gory details.



minute upgrade at your home or office.

Your upgraded scanner is covered for 90 days with our basic warranty, or you can extend your warranty for longer coverage. There's no risk to you.

But the biggest advantage is that the Abaton 8-bit Upgrade makes it easier for you to publish. Because now you can see exactly what each page looks like — photographs and all. Then you can send everything to a phototypesetter and eliminate the

need for position prints.

This 8-bit Upgrade spells the end of paste-up as we know it.

If you want more gory details on Abaton's 8-bit Upgrade Invasion, call Abaton at 1-800-444-5321. And let Abaton make your ideas easier to publish.

Abaton

We Make Your Ideas Easier to Publish™

End Users Circle 131 on Reader Service Card
Dealers Circle 107 on Reader Service Card

But I digress. I envisioned Visionary and the more recently announced VIP (Visionary Interface to Postscript) as a mythical product floating in a bed of clouds, bathed in a golden light, that would really make life easier. Follow the yellow brick road—you get the picture. I really wanted this stuff to work, but every time I called to set up a meeting to test it, people were . . . uh, out, call again. The Wizard is busy, go away. No, not that bad.

However, I was beginning to wonder.

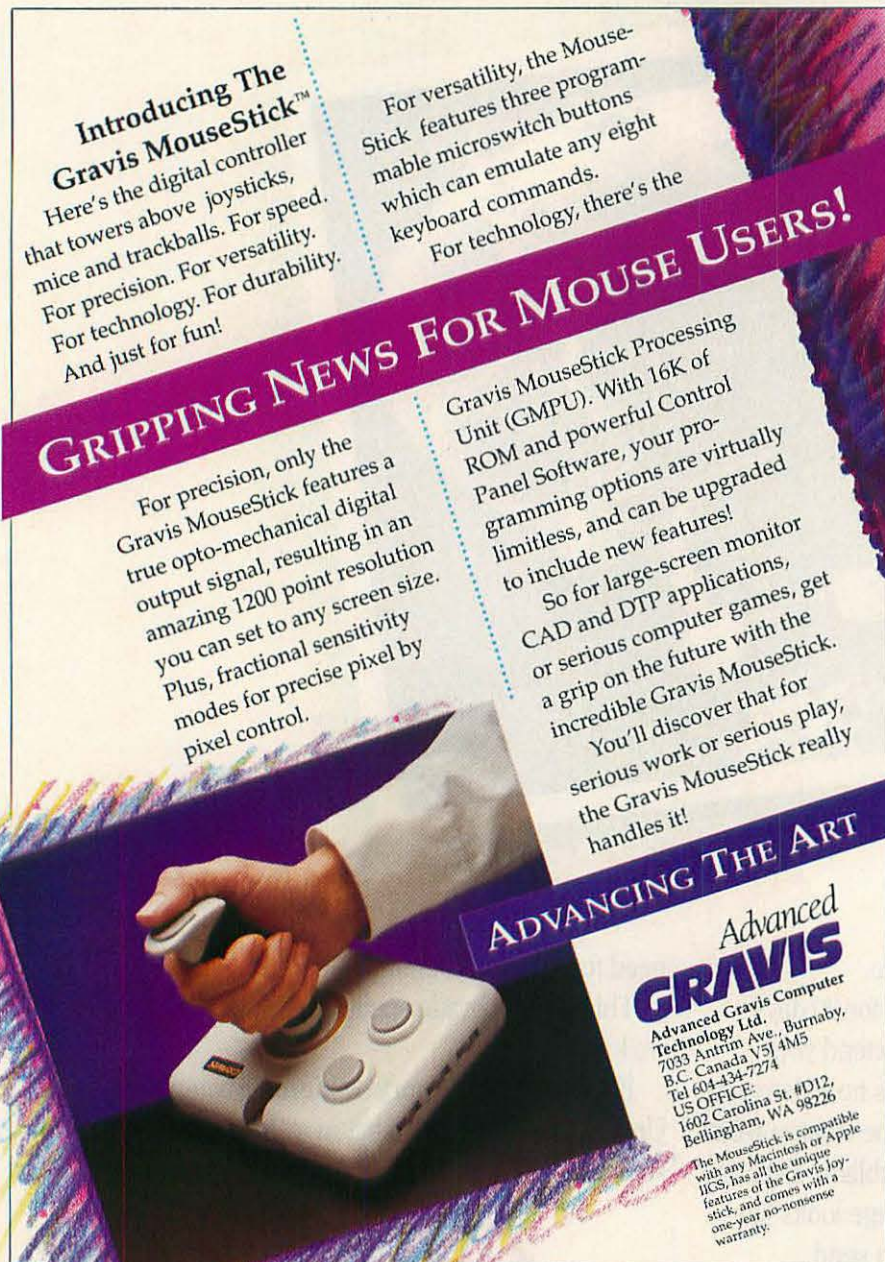
On the day of the test, a group of us wandered into the room where gleaming new Visionary products reside. We saw the Visionary workstation (a Mac II) replete with VIP software, 8-bit RasterOps monitor and color video board, QuarkXPress software, the gateway station (in this case, a Mac II with a 19.2 kilobaud modem), and the Scitex assembly station (designer furniture hooked up

to a freezer-size box with a couple of printed circuit boards in it). The assembly station uses proprietary Scitex software that does the actual color touch-up work and page composition, readying the data to be sent to the Scitex film plotter. Not evident were the laser film scanners, too big to fit in this already jammed room.

Earlier we'd sent the specifications for our pages and our grid to Balzer/Shopes, and one of the staff had prepared an XPress version of our electronic page grid to accept the text and pictures that we brought with us. First we tested graphics files with VIP and discovered that Visionary would not accept more than 256 colors in EPS files (another dialog box: too many colors!). The riposte came that we could have our illustrators use fewer colors. Our response (after five years of working with Mac-based illustrators, watching their skills with computer graphics slowly mature) was that the tools should not limit the creativity of the illustrators, and perhaps Scitex should figure out how to get its system to read all the color fills and gradients that PostScript can create.

Next we tried to "VIP" our encapsulated PostScript PageMaker files—that is, to have the VIP software convert the files to a bitmapped image that Visionary can use. The first problems were unrecognized PostScript strings or field errors in the dialog box, related to the custom fonts that we had designed in Fontographer. VIP could not read them, so we had to return to the original PageMaker files and laboriously change the type to fonts recognizable to VIP.

You can imagine our feeling as the realization slowly dawned that Visionary could not read the encapsulated PageMaker files directly, instead using VIP to create uneditable bitmaps. Scitex bundles VIP with specific machines. So someone at the service bureau would have to convert all our files to the Visionary system. And given the problems with both type and graphics, I was not encouraged by the likelihood of having to spend hours on the phone trying to help the VIP operator figure out the problems with our pages. The answer to the more troublesome question of what the pages will look like *(continues)*



Introducing The Gravis MouseStick™
Here's the digital controller that towers above joysticks, mice and trackballs. For speed. For precision. For versatility. For technology. For durability. And just for fun!

For versatility, the MouseStick features three programmable microswitch buttons which can emulate any eight keyboard commands. For technology, there's the

GRIPPING NEWS FOR MOUSE USERS!

For precision, only the Gravis MouseStick features a true opto-mechanical digital output signal, resulting in an amazing 1200 point resolution you can set to any screen size. Plus, fractional sensitivity modes for precise pixel by pixel control.

Gravis MouseStick Processing Unit (GMPU). With 16K of ROM and powerful Control Panel Software, your programming options are virtually limitless, and can be upgraded to include new features! So for large-screen monitor, CAD and DTP applications, or serious computer games, get a grip on the future with the incredible Gravis MouseStick. You'll discover that for serious work or serious play, the Gravis MouseStick really handles it!

ADVANCING THE ART

Advanced GRAVIS
Advanced Gravis Computer Technology Ltd.
7033 Antrim Ave., Burnaby, B.C. Canada V5J 4M5
Tel 604-434-7274
US OFFICE:
1602 Carolina St. #D12, Bellingham, WA 98226

The MouseStick is compatible with any Macintosh or Apple II/5, has all the unique features of the Gravis joystick, and comes with a one-year no-nonsense warranty.

Circle 401 on reader service card

MicroPhone II version 3.0

A "Stunning" Achievement in Software Engineering

The software that takes the hassle out of telecommunications. Like a finely crafted European touring sedan, MicroPhone II offers you unsurpassed power and allows you to communicate with style and agility.

Here are seven reasons why, if you're serious about telecommunications, you should consider owning MicroPhone II:

Power train. MicroPhone II is charged by the most powerful scripting engine for telecommunications, offering variables, string and math functions, arrays and file manipulation. You develop scripts with either the program's learn mode or its point-and-click script editor.

Design. Surprisingly, with all its unparalleled power, MicroPhone II is simple to use. Menus, dialog boxes and on-screen controls are well organized and pleasant to look at. Its "outstanding" manual is easy to read, clearly laid out and contains a thorough index.

Speed. Routinely clocked at 18,000 bits per second over ordinary telephone lines, MicroPhone II is the fastest telecom software around. Its file transfer protocols — XMODEM, 1K XMODEM, YMODEM, YMODEM-G, Kermit and ZMODEM — are all optimized to make your files fly across the country or around the world. The intelligent ZMODEM negotiates the most treacherous channels of a packet-switched network and resumes broken transfers with no loss of data.

Color options. MicroPhone II lets you assign color icons to your scripts, thus turning the *icon bar*, shown here, into your control panel. The icon bar can be scrolled,



resized and placed vertically or horizontally anywhere on the screen, awaiting your next click. Choose icons from the large collection provided with the software, or create your own.

Cruise control. Flexible scripting means that MicroPhone II can run on *automatic* while you're taking care of other important business. Whether collecting your electronic mail in the background, or calling Paris at midnight to transmit the daily sales report in French, the program is always at your service, saving you time and money.

Reliability. Because Software Ventures' engineers value your time on-line, they spend countless hours applying the most rigorous testing procedures to ensure that the program is crash-resistant. In the words of *The Macintosh Buyer's Guide*, MicroPhone II is "the most reliable of all the telecom programs we tested."

Test drive. Software Ventures so firmly believes in its superior technology that it gives you an unprecedented chance to *test drive MicroPhone II for 30 days risk free*. If for any reason you wish to return the program, you may do so for a full refund of your purchase price directly from Software Ventures — no questions asked.

But enough talk. Start using MicroPhone II today and find out for yourself why Jim Seymour and John Dvorak are the great communicators. After all, having invested all this money in the best hardware in the world, don't you deserve the best software?

Jim Seymour:

"... arguably the best communications software ever written."

John C. Dvorak:

"... stunning. Fast, slick; it does everything except slice bread."



S O F T W A R E
V E N T U R E S

Takin' care of business.

At Microtech, we make it *our* business to take care of *your* business. Our commitment is to offer you not only quality products, but real business solutions. Solutions you can count on. Because the more you demand, the more we deliver.

Only top-of-the-line components are used in manufacturing Microtech products to insure product solutions worth raving about. Like our NOVA 80, which Macworld rated "the cream of the crop...the fastest and least expensive external drive...". With unprecedented reliability, NOVA hard drives can work for any business solution.

For security and unlimited storage capacity, the high performance Microtech R45 removable cartridge drive is the perfect solution. Our Tape Backup Systems provide lightning fast, reliable solutions for archiving.

And only Microtech drives come with the longest warranties in the industry at no extra cost. Like five years on our external and internal hard drives and two years on our removable and tape backups. No one else offers that kind of confidence. No one! In addition, you'll get hundreds of dollars worth of free software,

including MacTREE PLUS, DS Backup, and a number of useful public domain programs. And now all of our hard drives come with demos of 4TH DIMENSION and SHOWCASE F/X.

We understand that along with great products, great service must follow. Before and after the sale, our dedicated customer service representatives are on hand to provide you with knowledgeable and friendly support. Toll free! And for 24-hour service, our *MicroLink™ BBS* provides technical support and software updates. Taking customer service a step further, Microtech offers the exclusive *Step-Up™ Expansion Program*, an easy, affordable upgrade path designed to help you keep pace with today's technology.

Quality products. Fantastic prices. Unequaled warranties. Dedicated customer service. These are the solutions you demand, and Microtech delivers. Takin' care of *your* business is *our* business, too. Call Microtech today.

1-800-325-1895

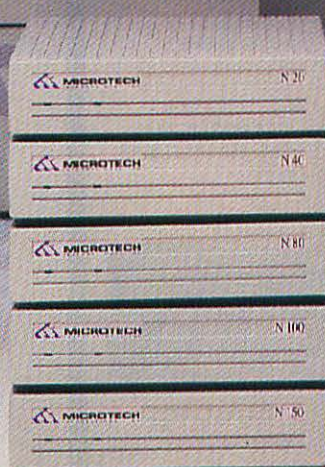
■ Nova Hard Drives

External

N20 - 20MB	\$ 520
N40 - 40MB	\$ 649
N80 - 80MB	\$1019
N100 - 100MB	\$1099
N150 - 150MB	\$1469

Internal

N40i - 40MB	\$ 569
N80i - 80MB	\$ 919
N100i - 100MB	\$ 999
N150i - 150MB	\$1399
N320i - 320MB	\$2699
N650i - 650MB	\$3430



■ Tape Backup Systems

NT60 - 60MB	\$ 799
NT150 - 150MB	\$1099

■ Removable Hard Drives

R45 - 45MB	\$1099
------------	--------

FREE DEMOS!



MICROTECH
INTERNATIONAL, INC.
158 Commerce St., East Haven, CT USA 06512

© 1989 Microtech International, Inc. All product names and logos are trademarks or registered trademarks of their respective owners. The 5 year limited warranty is offered on hard disk drives sold and delivered in the U.S. or Canada. Certain restrictions and exclusions apply. Terms and conditions of the 5 year warranty are available upon request. Prices and specifications subject to change without notice. MasterCard and Visa accepted at no extra charge.

Circle 243 on reader service card

once they've been sent through VIP must await the results of tests still being run at press time.

At the end of the day we still had not pulled film for the feature spread that we were working with, but we were generally positive. The advantages of better text resolution, some improved graphics files, a superior quality of film (denser, silver-based), and mechanical color from a single source are encouraging. Stay tuned.

INTERNATIONAL CONNECTIONS

One bright note regarding electronic publishing at *Macworld* has been our increasing success in communicating with our sister publications. There are now *Macworld* magazines published in Australia, Sweden, the United Kingdom, Denmark, and Taiwan (as an insert in *PC World Taiwan*). Japan is likely to follow with a publication in 1990. Both the Australian and UK magazines are connected

to our offices via 2400- and 9600-baud links, respectively. They use Farallon's Timbuktu Remote and log onto our network, where they access E-mail, text, and graphics files for use in producing their own magazines. Australia's Osmund Iversen has been particularly successful—he even beat us out with our own story on the IICx last March. The United Kingdom's Ian Winter uses many of our *How To* departments in the British *Macworld*, complete with their Illustrator and Free-Hand illustrations.

WHAT DO WE REALLY NEED?

We're doing a lot and thinking about the future, but we need some help from the vendors. Barco's announcement of screen calibration software for the Mac could help. Having several screens in the design group calibrated (using the same RGB colors) would help. Having the screens calibrated to CMYK color schemes would be even better, but that is nowhere on the horizon. Color Studio is finally out, as are new versions of Lightspeed and PhotoMac for color prepress work. Erasable optical drives promise to alleviate our storage problems with files for 24-bit color illustrations (7MB to 12MB for each small photograph). New color printers are bringing prices down. Seiko's new B-size printer is under \$10,000, and QMS has a new A-size color printer in the same price range. The necessity for transmission within production and design zones on the network will dictate that we go to Ethernet soon.

What we really need is software that displays CMYK color swatches on the screen in a verisimilitude of color from a known color system such as Munsell or Pantone. Then we need that incorporated into Illustrator et al., so that we can actually see our output on an RGB screen. We also need a 125mm scanner. The list goes on and on.

Despite all the disappointments and holes, the winter of 1989/90 will, I believe, prove to be the time when we move from "maybe we could do color" to "we're doing color prepress work on the Mac." (I know some do already—*Macworld* needs higher quality.) And desktop publishing is about to go through another explosive growth period. **M**

The Speed of Light

Optical Drive Technology at Stunning Speeds

Lighting fast, laser accurate. One third of a million pages capacity. The new Genesis 6000 removable 600MB optical drive by MACsetra Technologies. The unsurpassed standard of high capacity rewritable data storage and retrieval. The accelerated solution to storage intensive applications including graphic and image processing, publishing, engineering, education, data base management, high security, government and legal.

- Bootable, plug and play device.
- Adheres to Apple's strict guidelines, assuring compatibility in disk format and "MAC-like" user interfacing
- Operates in the A/UX operating system environment.
- Cosmetic compatibility with the Macintosh SE and II family
- Fully removable 600 mB cartridges combine infinite capacity with ease of use and security.



MACsetra Technologies
International Inc.

2414 Koyl Avenue
Saskatoon, Sask.
S7L 7L5, Canada

Ph. (306) 934-6044
Fax (306) 664-6688
AppleLink CDA0323



MACsetra

Genesis 6000

More Rave Reviews for the #1 SQL Database.

PC WEEK

Oracle for Mac Solves DBMS Puzzle *SQL/HyperCard Combo Produces Sophisticated Applications*

By Susan Janus

Database giant Oracle Corp., of Belmont, Calif., recently rounded out the list of platforms supported by the company's relational database management system (DBMS) with the release of Oracle for Macintosh.

The new Mac DBMS teams the power of Oracle's Structured Query Language (SQL) with HyperCard's customizable and easy-to-use interface.

This combination allows Mac developers to create sophisticated applications that appear simple to users—a unique software-development opportunity unavailable on any other platform, including the PC, according to early corporate users we contacted.

In addition, users said, the network version of Oracle for the Mac allows the advantages of the HyperCard interface to serve as a front end to existing corporate relational databases residing on other platforms, such as mainframes and minicomputers.

Consequently, the Mac software has great potential for...

Oracle for Macintosh

DBMS Brings New Power and Face to Mac Application Development

WHAT CORPORATE BUYERS LIKE

- Offers SQL capabilities
- Uses HyperCard to mask complexity of database applications
- Serves as front end to relational databases on other platforms

- Can link different Oracle database platforms with network version
- Provides good documentation and support

"ORACLE for Macintosh is a well-designed product... a programmer can, with just an hour's training, create a database on a host with a simple Macintosh interface in three minutes—honest." **★★★★**

MacUser, June 1989

"ORACLE for Macintosh is exciting for companies that have Oracle (or DB2) databases on a mainframe and want a practical Mac data entry and development system."

Mac Week, March 14, 1989

"Get yourself a copy of ORACLE for Macintosh and get a flexible toolkit that can be molded to solve just about any database problem."

MacGuide Magazine, June 1989

oping database management systems to connect departmental Macs to larger systems. Jeff Menz, a systems analyst for a scientific R and D organization, is currently using Oracle for Macintosh to develop a system that will give the company's numerous Mac users access to an Oracle database running on a VAX. Using the network version, Menz will link departmental AppleTalk networks to the VAX over a TCP/IP network.

Oracle Provides the Groundwork

The key benefit of Oracle's product is that "all the fundamental technical work—the protocols, the compatibility with the AppleTalk network—has been done by Oracle," Menz said. "I just have to build the HyperCard interface and do the database design work."

The result will be an Oracle relational database application on the VAX with a HyperCard front end that Mac users feel comfortable with, he explained. Also, the company will have one logical relational database instead of numerous fragmented local databases. This allows tighter security, improved data integrity and better performance, he added.

Until 10/31/89, for \$299¹ you can access the number one SQL database from either HyperCard or 4th DIMENSION. With our 30-day money-back guarantee, the only thing you stand to lose is a great buy. Call today.

**\$299 Two-Thumbs-Up
Special Offer Ends
10/31/89**



Dan Shafer,
Author of
Hypertalk
Programming

Guy Kawasaki,
President of ACUS,
developers of
4th DIMENSION

ORACLE®

COMPATIBILITY • PORTABILITY • CONNECTABILITY

Call 1-800-ORACLE1, ext. 7869 today.

¹ Stand alone version licensed for developers only. Requires Macintosh SE or II with 2 Megabytes of RAM, 5 Megabytes hard disk space, floppy disk drive, and HyperCard 1.2. Includes 30-day installation support, ORACLE database, HyperSQL (HyperCard Interface), SQL*Plus, OCI and Pro*C (Macintosh Programmer's Workshop is required for programming usage), System Stacks and Example Stacks. Full networking version is \$999 and includes SQL*Net (for database communications), Async, 3270, DECnet, TCP/IP support, Alisa System's TSSnet DECnet protocol and drivers and Kinetic's TCP/IP protocol and driver. Accessing database software on other machines requires a separate protocol handler and gateway software for the other machine. Call for additional information.
Copyright © 1989 by Oracle Corporation. ORACLE is a registered trademark of Oracle. The other companies mentioned own numerous trademarks. TDBA



RODIME
SYSTEMS

Rodime Introduces the Standard for Hard Disk Technology.

COBRA DRIVES SET THE STANDARD. Cobra high performance internal and external hard drives are the finest drives available for your Mac. With capacities of 45MB, 70MB, 100MB, and 210MB, Cobra is the answer to all your storage needs. External Cobra drives come in a new, sleek low profile cabinet that fits neatly beneath your Mac Plus, Mac SE or Mac SE/30. Internal Cobra drives come with two mounting brackets. One, for installation in the Mac II or Mac IIx, and one for mounting in the Mac SE/30 or Mac SE which allows you to keep both floppy ports active.

FAST 18ms ACCESS TIME. Nothing is faster! With an average access time of 18ms Cobra is the fastest drive available on the market for the Macintosh line of computers. Cobra drives also come with a 16K Caching Buffer which allows even faster access to your data, (sub 18ms), by storing frequently used data in "instant access" RAM.

CONVENIENT SINGLE POWER SOURCE. With the external Cobra, the flip of one switch on the drive activates your CPU, printer and other peripherals, eliminating cumbersome cables.

LED'S THAT PUT YOU IN CONTROL. Now you can be aware of the status of the drive at all times, with power-on, drive activity and fault warning lights.

ONE YEAR WARRANTY. Rodime Systems offers the level of reliability, innovation and support only an original equipment manufacturer can provide.

FREE BACK-UP AND UTILITY SOFTWARE. Cobra drives come with a FREE copy of FASTBACK™ back-up software, a \$99.00 value, as well as Rodime's Utility Software which allows partitioning (including A/UX), media verification, formatting and driver installation.

RODIME'S COMMITMENT TO QUALITY. At Rodime Systems, the craftsmanship built into every drive is our commitment to produce the finest, most reliable drives available. When you buy a Rodime Systems product, you are buying years of manufacturing experience, state of the art engineering and peace of mind that comes from knowing that more Mac users have chosen Rodime drives than any other.

Rodime Systems 851 Broken Sound Pkwy.
Boca Raton, FL 33487 407-994-5585
UK, Nasmith Rd., Southfield Industrial Estates
Glenrothes, KY6 2SD, Fife, Scotland 592-774-704
France, Parc d'Affaires de Jouy-en-Josas
5bis Rue du Petit Robinson, 78530 Jouy-en-Josas, 1-34-659798

Fastback is a trademark of Fifth Generation Systems, Inc., Macintosh, Mac SE, Mac SE30, Mac II, Mac Ix and A/UX are trademarks of Apple Computer, Inc., Cobra is a trademark of Rodime Systems.



Special Anniversary Offer

5 YEARS STRONG

We're celebrating our fifth year anniversary. Join us for incredible savings on every issue of Macworld.

Discover Macworld with a Special Anniversary Savings Rate!

12 ISSUES JUST \$24

MACWORLD

POWERFUL

Each issue is packed with powerful techniques, straight-shooting reviews, tips and how-tos.

☐ YES, send me one year (12 issues) for only \$24.00. That's almost 50% off the annual cover price of \$47.40.

☐ Even bigger savings! Send me two years (24 issues) for just \$37.90.

Name _____

Company _____

Address _____

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is \$30 for 12 issues. The annual cover price is \$3.95 per issue, \$47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

4AMS6

MACWORLD

INTUITIVE

Develop an understanding of the Macintosh with thought-provoking articles and insightful features.

☐ YES, send me one year (12 issues) for only \$24.00. That's almost 50% off the annual cover price of \$47.40.

☐ Even bigger savings! Send me two years (24 issues) for just \$37.90.

Name _____

Company _____

Address _____

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is \$30 for 12 issues. The annual cover price is \$3.95 per issue, \$47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

4AMT4

MACWORLD

FRIENDLY

User-friendly hints and applications to make using the Mac more fun and productive than ever before.

☐ YES, please send a one year subscription (12 issues) to my associate or friend listed below for only \$24.00. That's almost 50% off the annual cover price of \$47.40.

☐ Please Bill Me Later.

Send Gift To:

Send Gift From:

Name _____

Name _____

Company _____

Company _____

Address _____

Address _____

City/State/Zip _____

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is \$30 for 12 issues. The annual cover price is \$3.95 per issue, \$47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

4AMU2

MACWORLD



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

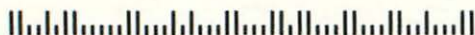


BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



SAVE NEARLY 50%

When You Subscribe Today!

No other magazine helps you like Macworld. Powerful, Intuitive and Friendly. Macworld is a wealth of information which keeps you up to date on the latest products, news, tips and tactics. Dedicated exclusively to the Mac II, SE and Plus.

We look out for your interests. We tell you what's new for the Mac. What it does. Who it's for. Compare similar products—and name names! Discuss pros and cons. Assess value for money for both hardware and software.

Macworld helps you make the most of your Mac.



MAIL THE ATTACHED CARD TODAY!

Say Goodbye to Financial Hassle!

NEW
VERSION 1.5



So Long, Tedium

Why waste time doing your finances? Quicken slashes time and effort every month...perfectly organizes your finances...and provides instant insight into your money matters.

Breeze Through Financial Chores

Quicken takes the drudgery out of routine finances. It automates everything from bill paying to bookkeeping...reconciliation to reporting. Quicken does in minutes what used to take hours.

Quicken actually learns your regular bills. Just confirm payment amounts, and in seconds, Quicken performs 14 bookkeeping steps, categorizes expenses, and hands you printed checks addressed for mailing. And, Quicken keeps perfect records of all your handwritten checks.

A Bigger Picture with Smaller Effort

Quicken automatically organizes your finances. Imagine always knowing how much money you have...and exactly where it's going. At the click of a button, Quicken generates insightful reports such as Income and Expense, Cash Flow, Budget vs. Actual, Job Costing, and more.

Relax at Tax Time

Stop dreading tax time. Quicken keeps important tax data at your fingertips automatically. In seconds, you can print an itemized list supporting your deductions. Plus, Quicken links directly to top selling tax software like MacInTax.*

NEW VERSION 1.5 FAR MORE THAN A CHECKWRITER

- Far more flexible reports:
 - Multi-column reports show spending and profit trends over time
 - A/R aging and customer history reports
 - A/P reports by supplier
- "Modeless" reports recalculate automatically on screen
- Improved payroll handling
- More ways to split transactions
- New wallet-size and laser voucher checks
- New Canadian dates and tax categories

The World's #1 Best Seller

Quicken is the best selling business and personal finance software in the world. Ken Landis of MacUser gives Quicken the highest rating of five mice and says, "Quicken is a great program...the industry standard." Broadway playwright ("Mame") Robert E. Lee remarks, "This astonishingly simple program...is truly true to its name. Indeed, it does quicken the time required for routine bookkeeping!"



No Computerese or Accounting Mumbo Jumbo

Quicken is so easy, you're up and running in minutes. That's because the whole program looks and works just like the paper checkbook and register you've always used. Quicken doesn't change how you do your finances, only how fast you finish them.

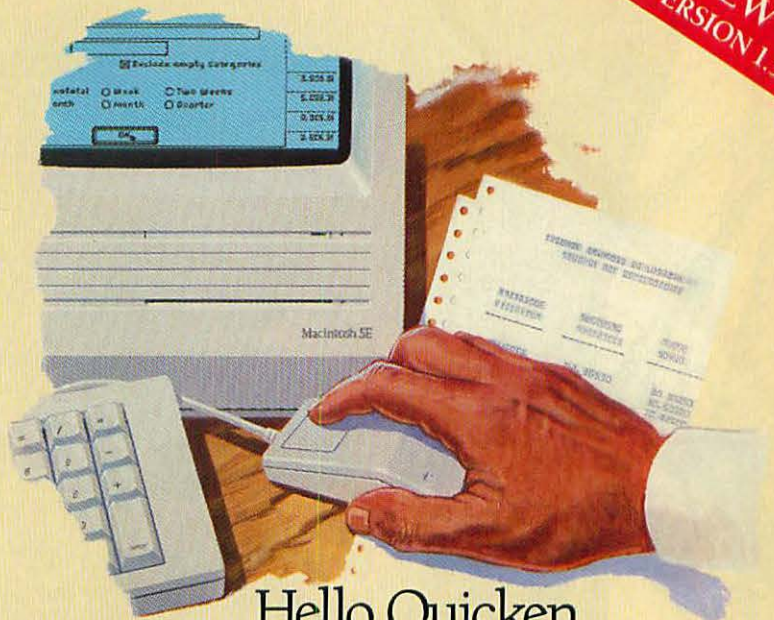
Powerful Business Features

Over half of Quicken's customers use it for small business bookkeeping. Quicken produces financial statements such as P&L, Tax Summary, and other useful management reports. It forecasts your cash flow, and tracks A/R, A/P, payroll, jobs, clients, properties, and more.

SPECIFICATIONS

Software Compatibility: Exports to SYLK, Text, Excel,* HyperCard,* and MacInTax.
Hardware Compatibility: All Macintoshes with at least 512K RAM. Works with your printer and monitor; we guarantee it.
Capacity: Unlimited number of bank accounts and transactions (subject to available disk space). Maximum amounts to \$9,999,999.99.
Other: Unlimited FREE technical support. Not copy-protected. Checks are preapproved by all financial institutions in the U.S. and Canada. Sample checks and order form are enclosed in Quicken package. Also available for IBM and compatibles and Apple II (feature sets vary).

Quicken is available at most computer and software stores.



Hello, Quicken

Try Quicken FREE for 30 Days

Order from the coupon below, and if you're not completely satisfied for any reason, simply return it for a full, no-questions-asked refund. So, why wait? Say good riddance to financial hassle, and order Quicken today.

Send in the coupon, or call
1-800-624-8742 U.S. and Canada.

\$59.95



Yes, I want to say goodbye to financial hassle and try Quicken. If I'm not completely satisfied, I may return it within 30 days for a full refund. Quicken Version 1.5 for Macintosh, U.S. \$59.95, includes free shipping by air. California residents, please add sales tax. For coupon orders, allow 10 days for delivery (longer to Canada).

Mr. / Ms. / Miss / Mrs. / Dr. (please circle)

Name _____

Address _____

City _____ State _____ Zip _____

Daytime Phone () _____

Preferred payment method (check one)

☐ Check enclosed (no purchase orders or COD, please)

☐ Visa ☐ MasterCard ☐ American Express

Card No. _____ Exp. Date _____

Signature _____

Mail to: _____

Or, call: 1-800-624-8742 in U.S. and Canada for charge card orders.

Current Quicken users:

To upgrade, call the 800 number above.

Intuit

540 University Ave.
Palo Alto, CA 94301

G-MW10



Model created with ModelShop by Mark Van Norman, rendering by Sandy Chase using Studio8™ and LaserPaint™.

TAKE YOUR IDEAS TO A HIGHER LEVEL

Now you can sell your design ideas almost as fast as you create them. ModelShop™ is powerful, yet easy-to-use architectural design software that lets you sketch your ideas in three dimensions.

With ModelShop, you can quickly explore designs from a variety of views — including fast perspectives. And significantly reduce the time spent on costly revisions and presentations.

ModelShop easily handles everything from tiny architectural details to urban planning models — all while maintaining a 1/1000-inch accuracy!

What's more, ModelShop creates letter and poster-sized prints on a standard ImageWriter or LaserWriter. Or dramatic

color views on a color printer or film recorder. You can even export color views to other graphic applications for further rendering.

Take it from a higher authority. Call (415) 543-3848 today. Ask for a demo disk.



P A R A C O M P

*Paracomp, Inc.
123 Townsend Street, Suite 310
San Francisco, Ca 94107, 415-543-3848*

ModelShop is a trademark of Paracomp, Inc. Other brand and product names are trademarks of their respective holders. © 1989 Paracomp, Inc.

Circle 229 on reader service card



LETTERS

A forum for Macworld readers

The Real Waldo

Nice coverage of video in the June issue ["Star Quality"], but I have one correction to make: the Waldo was not invented and certainly not named by Jim Henson. It was first described and named by science fiction master Robert Heinlein more than 40 years ago. He wrote a short story called "Waldo" about a brilliant, handicapped, and irascible scientist not unlike Stephen W. Hawking. In order to overcome his handicap, Waldo builds a space station (no gravity) and outfits it with armatures that allow him to manipulate the outside world. Now that [the Waldo] is becoming a reality, it's important to give credit where it's due.

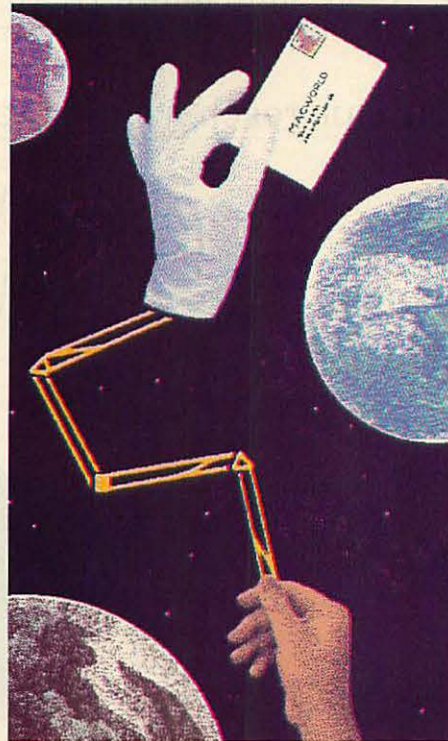
Seth Godin
Mount Vernon, New York

Jim Henson's character was in fact derived from the science fiction story. Thanks for setting the record straight.—Ed.

Taking a Stand

I've just read Deborah Branscum's article in your May issue [*Conspicuous Consumer*]. As one of those swindled by Liss, I'd like to express my feelings, not so much about Liss as about your magazine—one of Liss's primary means of reaching the public.

You tell us that Atlanta's Better Business Bureau had been receiving calls about Liss



SCOTT BALDWIN

comer—or even a large group of them.

Jeff Faria
Hoboken, New Jersey

We forward reader complaints to advertisers and other vendors in an attempt to resolve disputes. Macworld's advertising department stopped accepting ads from Your Mac Source after it became apparent that customers were not receiving products they had ordered.—Ed.

Getting Up to Speed

In "Ten Ways to Speed Up a Mac" [April 1989], the author says "You can also accelerate a Mac SE by transplanting the Mac II's

68020 processor and 68881 coprocessor." Does this mean I can simply replace chips on the SE board, or do I need to buy an accelerator board? I have 4MB of memory I don't want to lose.

Kenneth C. Beck
via CompuServe

You do need one. Chances are your 4MB of RAM has 120-nanosecond chips and will work with an accelerator. Or buy an accelerator that can use the RAM on the SE system board, as discussed in "Processors: Is Faster Better?" (Macworld, March 1989).—Ed.

Added Dimensions

Your June 1989 article on animation, "Move It!" contains several inaccuracies. The

product comparison chart lists our entire Dimensions line of software at \$2500. While this is correct, the only product needed for imaging and animation is Dimensions Presenter, which retails for \$495. The Export/Import section of the chart fails to list Presenter's support for the PICS animations format. Presenter imports as well as exports MacPaint files and accepts 3-D files from a variety of other programs and formats, including DXF, VersaCAD, and Super 3D.

Eric Hardman
Visual Information Development
La Puente, California

Corrections

In "Insights on ReadySetGo 4.5" (August 1989), the power search-and-replace tip should read: "To search for or replace a tab character, type ␣ (Option-d followed by ␣) in either the Find or Replace text fields. To search for or replace a return character, type ␣ or ␣ (Option-d followed by r or n)."

Truevision (800/858-8783) makes three NuBus boards that provide 32-bit color capability: the NuVista 1M, the NuVista 2M, and the NuVista 4M, which offer 1MB, 2MB, and 4MB of RAM, respectively (Macworld News, June 1989). All three support 1, 2, 4, 8, 16, and 32 bits per pixel.

The phone number for (continues)

as early as January 1988, and you imply that if we were wise consumers we'd have checked this out and been forewarned. Yet your magazine carried Your Mac Source ads at least through April.

A magazine that trumpets its services to its readers should regularly monitor the performance of its advertisers, both by keeping in touch with the appropriate agencies and by soliciting comments from readers. A warning to an advertiser from a magazine, which has the power to make improper conduct widely known, has a lot more clout than a complaint from an individual cus-

It syncs to

The fact that you're considering a Macintosh II shows you're serious about computers. That you want to reach as far as a great system will let you. So you can reach your potential.

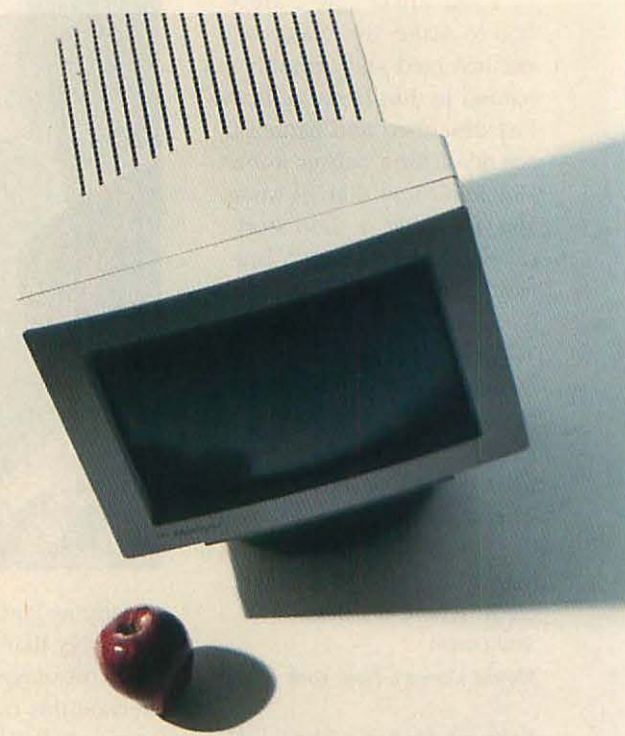
Well, now there's a way to go even further.

By giving your Mac II a MacSync™ monitor from NEC.

MacSync is designed solely for the Macintosh II Video Card. And because it is the

direct result of some meaningful conversations with Mac II users, it has all the features you've always wanted in a monitor.

For instance, you asked for easier, more convenient controls. So we moved them up front. You also wanted a 14" non-glare screen to reduce



the Macs.

fatigue. A smaller footprint and a tilt-swivel base, for more comfortable viewing. They're yours. What's more, we give you a cabinet that looks as good from the back as it does from the front. And a HyperCard stack

on-screen user reference guide called MacSync Valet.™

All at no extra cost.

And if you don't mind us saying so, that's the least you and your Macintosh II deserve.

Designed and optimized just for the Macintosh II.

MacSync from NEC. We've taken everything we've learned about

Macintosh II Video Card is a trademark of Apple Computer, Inc.

making great color monitors. And applied it to the Macs.

Macintosh and HyperCard are registered trademarks of Apple Computer, Inc.

For literature, call 1-800-826-2255. For technical details, call NEC

MacSync and MacSync Valet are trademarks of NEC Home Electronics (USA) Inc.

Home Electronics (USA) Inc. 1-800-FONE-NEC.

© 1989 NEC Home Electronics (USA) Inc.

Circle 257 on reader service card

NEC

Advanced Logical Software
(Where to Buy, July 1989),
maker of Anatool, is
213/653-5786.



Featured on our August
1989 cover (but unattributed)
was this photo of the RasterOps
24-bit color display.

Neglected Fonts

Erferf Fenton's otherwise
fine article in the May issue

about PostScript fonts ("Enhancing PostScript Fonts") neglected to mention our collection of over two dozen Hebrew PostScript fonts that are compatible with our Hebrew-English word processing and page-layout products, Rav Ktav, AllPage, and MacKtav. Several of these fonts are also available in formats compatible with English applications.
Alan Rosenbaum
Davka Corporation
Chicago, Illinois

Pascal Comparisons

We appreciate the positive review of Think's Lightspeed Pascal 2.0 in your June issue, but we would like to correct a few inaccuracies that may confuse your readers.

The add-on tutorial you mentioned, Just Enough Pas-

cal, was included with Pascal only during a special introductory period. It lists for \$75.

You state that "it's difficult to predict which compiler will produce better object code from your source, especially for large programs." Actually, code generation can be compared using several standard benchmarks or by building a large project. Think Pascal has a two-pass optimizing compiler that, according to our benchmarks, consistently generates smaller, faster code than TML Pascal for any project, small or large.

Your review commented on TML's customer support but did not indicate whether you had tested our support as well. Symantec provides free phone support, a forum on CompuServe, and a 30-day,

money-back guarantee for all its products.

Julie Bingham
Symantec Corporation
Bedford, Massachusetts

Compilation results on real applications (compiled code size 200K to 400K), which typically include text handling and graphics manipulation, show more variation in size and execution speed than those for the small numerical benchmarks on which Symantec bases its claim.—Ed.

Macworld and DTP

Your May 1989 issue begins with your explanation of the change to DTP to produce your magazine [Commentary]. In explaining your reasons for using PageMaker, you say that "PageMaker was an emotional favorite with many of the designers." You go on to suggest that Quark may be a less-
(continues)



Our Family Works . . . With Your Family.



256K SIMM



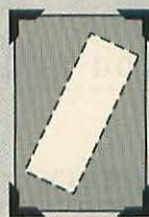
1Meg SIMM



4Meg SIMM



NTX SIMM



Future . . .

- Japanese Manufacturers
- Surface Mount
- VISA/MasterCard
- Lifetime Warranty
- University/Corporate PO's
- Same Day Shipping

(800) 622-1722

(408) 559-8544 in CA

2005 Hamilton Avenue, Suite 220
San Jose, CA 95125



Mac Plus



Mac SE, SE/30



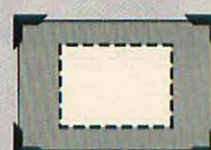
Mac II, IIx



Mac IIcx



LaserWriter IINTX



Future . . .

Brand or product names are trademarks or registered trademarks of their respective holders.

Circle 436 on reader service card

THE HARD DISKS THAT SURVIVED HARD DISK HELL.

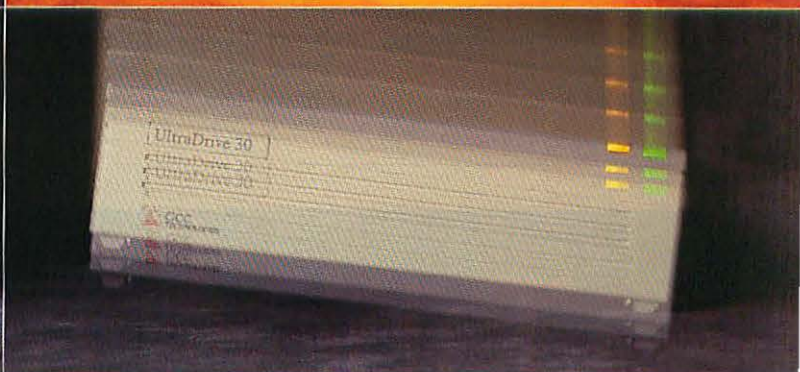
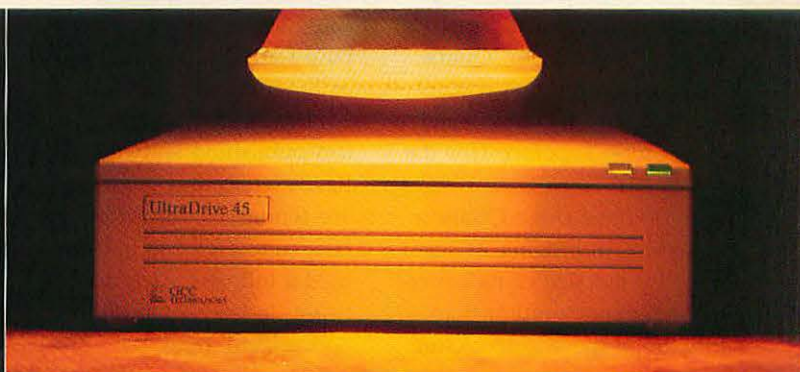
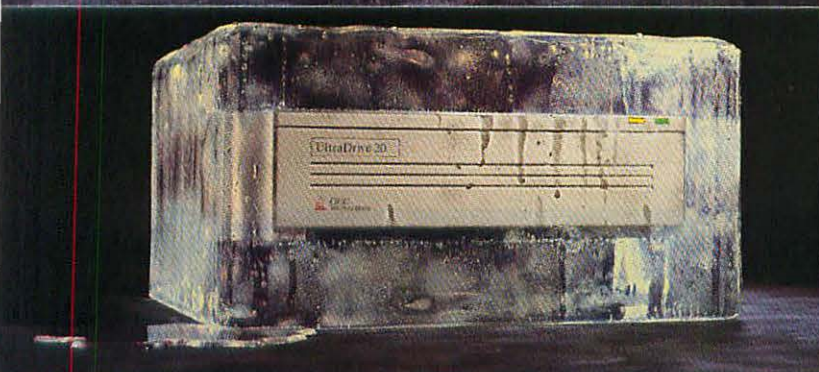
Practically all hard disks perform well under ideal conditions. UltraDrive™ hard disks are designed to perform well in a far less hospitable environment. A world we've duplicated at the industry's most

file recovery, DES security, and backup.

You also get UltraWare™, including a disk management program featuring true SCSI partitioning (DiskManager™), a rapid print spooler (QuickSpool™), and over

Two Year Warranty.

Finally, UltraDrive carries a full two year warranty on parts and labor (ask for details). We also offer repair service



grueling proving ground for hard disks.

The GCC School Of Hard Knocks.

In the design stage, we shock components and assembled hard disks in both operating and non-operating states. Next, vibration tests mimic the jostling of car, truck and air transport.

Then, we drop our disks over 20 times from varying heights in varying operating and non-operating states on every face and edge. They're exposed to a wide range of humidity and temperatures—from 122° to -40°F. And finally, every hard disk is burned-in for 14 hours before shipment.

All of these proven hard disks come with a generous software library which normally retails for several hundred dollars. Including Symantec's® SUM II, a utilities package featuring data recovery, deleted

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.

3 MB of selected shareware software.

But UltraDrive hard disks don't just work longer and smarter than others, they also cost less. In fact, the UltraDrive series is priced up to 50% less than Apple's®.

Toll-Free, Hassle-Free, Risk-Free.

To order your internal or external UltraDrive, call 800-422-7777 from 9 to 9 on weekdays, or 10 to 4 on Saturdays. Our expertly trained staff is glad to answer questions, provide technical support, and offer advice on choosing any of our products. Ask for our free catalog.

When your order is received by 8 PM (EST), it will be shipped the same day via overnight delivery for only \$9.

UltraDrive comes with a 30 day money-back guarantee. Just return your hard disk for a full refund, no questions asked.

at any one of hundreds of GCC dealers.

The UltraDrive Family.

MODEL	EXTERNAL	INTERNAL
UltraDrive 20.....	\$549	NA
UltraDrive 30.....	\$629	\$529
UltraDrive 45.....	\$699	\$599
UltraDrive 80.....	\$949	\$849
UltraDrive 155.....	\$1499	\$1399

For the name of the authorized GCC Technologies dealer nearest you, or

To Order, Call 800-422-7777.

We are glad to accept MasterCard, Visa, American Express, or your company's corporate purchase order.

 **GCC TECHNOLOGIES**
Peripherals With Vision.™



than-stable company and that you chose to go with an "older, larger company."

I'd like to point out that I was using Quark products before PageMaker was a glint in anyone's eye. Quark is one of the oldest Apple developers in existence, and it published what is still *an emotional favorite* with many Apple II users, Word Juggler. Quark also created the first typesetting program for a personal computer—Typeface (for the Apple III).

You have done Quark a disservice in judging its stability by the size of its advertising revenues rather than looking at the whole picture.

Ralph Pollock

ImageSetters Electronic Publishing
Service Center
North Hollywood, California

Desktop Divergence

As a typographer and desktop publisher, I must loudly protest Jim Heid's conclusions ["Page-Layout Contenders," April 1989]. The article is not only misleading, but quite inaccurate. QuarkXPress, PageMaker, and ReadySetGo shouldn't even be in the same category, let alone be compared as equals (or nonequals, as the author suggests).

PageMaker is perfect desktop-publishing software, while ReadySetGo and QuarkXPress are typographical programs best suited for use in a print-media industry such as advertising, in-house typography, and related areas.

Those of us in the industry rely on absolute typographic control, such as a full range of point sizes, vertical and

horizontal text distortion, and the ability to expand and condense type, type in half-point increments, adjust leading in half-point increments, reverse type, and overlap letters.

Why shun all the typographical control we've had in the past? After all the years I've spent learning typography, I'm certainly not willing to settle for less.

Cyndie L. Shaffstall

MS Graphics

Tucson, Arizona

The RAM Gulper

I must comment on Erfert Fenton's article "Brushes with Color" in the May issue.

I was appalled by her complaint about the measly 690K that Studio/8 requires, but there was no mention of the real memory hog—Pixel-

Paint. This RAM gulper wolfs down a whopping 1757K. On my 2MB Mac II, that left just 48K of memory.

My point is that the article is somewhat misleading and incomplete. First, if you don't have at least 4MB of RAM, forget about PixelPaint. Second, the chart on page 153 should have a row indicating the amount of memory required by each application.

Gary D. Van Aken

Littleton, Colorado

We were referring to the amount of hard-disk real estate Studio/8 takes up, but you have a point that many graphics programs are RAM hogs. Although you complain that PixelPaint 1.1 takes up 1757K, Studio/8's application memory size is 2200K. We encountered no memory problems with any of the paint programs we tested, but then we were using a 5MB Mac II. —Ed. (continues)

Tables in PageMaker!

Aldus PageMaker®



+

TableTools™

MSI

=

Tables
in
Desktop
Publishing

To order PageMaker, visit your nearest authorized Aldus dealer.
Or, call 1-800-333-2538,
for a FREE information packet.*

To order TableTools, visit your nearest authorized Mansfield Systems dealer.
Or, call 1-800-872-3332,
In California 1-800-367-3332,
for a FREE information packet.*

*Offer good in U.S. and Canada only and expires September 30, 1989. Trademarks/owner: Aldus PageMaker and the Aldus logo/Aldus Corporation; TableTools/Mansfield Systems, Inc.

Circle 33 on reader service card

FOR THOSE OBSESSED WITH PERFORMANCE, A HARD DISK THAT MATCHES YOUR OBSESSION.

Today there are any number of peripherals designed to push the performance envelope of the Macintosh.[®] But none pushes harder than an ingenious new series of hard disks from GCC Technologies.[™]

utilities package featuring data recovery, deleted file recovery, DES encryption security, and a powerful backup program.

You also get UltraWare,[™] GCC's own software package which includes a disk

return it and we'll cheerfully refund your money, no questions asked.

Two Year Warranty.

Finally, UltraDrive S carries a full two



Its name is UltraDrive[™]S: a complete family of 40 to 175 MB hard disks that relegates all others to the status of underachievers.

No Hard Disk Works Faster.

Simply stated, UltraDrive S is the fastest hard disk in its class. A distinction made possible by an on-board RAM cache that speeds access to recent or sequential data requests. By a capability called 'one-to-one interleaving' that feeds you data as fast as your Macintosh can take it. And by amazing average access times as low as 12 ms.

All of which is good news indeed for anyone who works with large spreadsheets, sophisticated graphics or other data-intensive applications.

No Hard Disk Works Smarter.

Each UltraDrive S hard disk comes with an extensive software library ordinarily retailing for several hundred dollars. Including Symantec's[®] SUM II, a comprehensive

management program featuring true SCSI partitioning (Disk Manager[™]), a rapid print spooler (QuickSpool[™]), and over 3 MB of selected shareware software.

In sum, to anyone obsessed with performance, UltraDrive S provides an ideal vehicle for self-expression. And at a price over 35% less than Apple's[®] hard disks, it even performs better as an investment.

Toll-Free, Hassle-Free, Risk-Free.

To order, call 800-422-7777 from 9 to 9 on weekdays, or 10 to 4 Saturdays. Our expertly trained staff will be glad to answer questions, provide technical support, and offer advice on choosing and getting the most out of any of our products. Ask for our free catalog. When your order is received by 8:00 PM (EST), it will be shipped the same day via overnight delivery for only \$9.

What's more, we *guarantee* satisfaction. If after trying UltraDrive S for up to 30 days you aren't completely satisfied, just

year warranty covering both parts and labor (ask for details). But that's not the only way we ensure your peace of mind. We also offer repair service at any one of hundreds of GCC Technologies dealers.

The UltraDrive S Series.

MODEL	EXTERNAL	INTERNAL
UltraDrive 40 S	\$799	\$649
UltraDrive 80 S	\$1099	\$949
UltraDrive 100 S	\$1299	\$1149
UltraDrive 175 S	\$1799	\$1699

For the name and location of the GCC Technologies dealer nearest you, or

To Order, Call 800-422-7777.

We are glad to accept MasterCard, Visa, American Express, or your company's corporate purchase order.

**GCC
TECHNOLOGIES**
Peripherals With Vision.[™]

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.

The First Virtual Screen

Macworld's May 1989 issue included a comparison of noncolor monitors for the SE and the Mac II by Bruce Webster ["Getting Down to Black & White"], which stated that Radius pioneered the idea of the virtual screen on the Mac. We were the first to bring a virtual screen to the Mac with our software product, Stepping Out. Stepping Out II is an effective big screen that many Mac users are choosing to use with graphics, desktop publishing, CAD, and word processing. I believe it would be in your readers' interest to include a description of Stepping Out in an overview of add-on monitors.

Joan Blades
Berkeley Systems
Berkeley, California

Full-Featured Printing in HyperCard

The predicament faced by David Watson, who set up his database in HyperCard only to discover that it has limited reporting capabilities ("Database Show-down," June 1989), struck a responsive note. When I read the article, I had just finished the final version of a HyperCard external function that adds full-featured printing to HyperCard, including the ability to mix text and graphics with external PICT files. The XFCN (called Xprint) was designed to do exactly the kinds of tasks Watson was unable to do without a more sophisticated HyperCard printing interface. Xprint is part of a package

of new HyperCard functions and idea stacks that retails for \$29.95.

Sam Thornton
Stak-X Software
Fairfield, Nebraska

Developing with Excel

I read with great interest "Developers Using Excel" [Macworld News, May 1989]. As developers, we at Spreadware feel that, because of its installed user base and capabilities, Excel has been the only software worth supporting with sophisticated products. This may change with the introduction of Full Impact and Wingz.

Our product, Minimum Requirements, is a \$29.95 macro-driven record-keeping system for small businesses.

Word of mouth is often what gets the small business started, and it is good to know that a publication as large as yours is listening. Excel provides a good platform. Macworld provides an excellent forum.

Eric Graham
Spreadware
Hayward, California

.....
Letters should be mailed to Letters, Macworld, 501 Second St., San Francisco, CA 94107, or sent electronically via CompuServe (70370,702) or MCI Mail (addressed to Macworld). Include a return address. We regret that, due to the high volume of mail received, we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld. ☐

At only \$995* it's the most affordable tape system you can own. And we can back it up.

Sooner or later your Macintosh will need the security of data back-up. So the question is, which method? Removable disk media is too expensive. Floppies are too slow. And some systems/media are too volatile.

That's why the Braemar SX40 Data Cartridge Sub-system makes sense. There's no faster, safer method of back-up than cartridge tape. And now, the Braemar SX40 makes it affordable.

Braemar is a leading manufacturer of tape-based systems for the OEM marketplace. In fact, we make many of the drives sold by our competition.

So obviously we can back our claim. And build it for less.

**TO ORDER THE SYSTEM THAT
BACKS YOU UP, CALL.**

1-800-328-2719

*60Mb per Cartridge Capacity. The SX40 uses the DEI or 3M Series 2000 Data Cartridge.



New
60 Mb
Version

"A WORLD LEADER
IN DATA
STORAGE TECHNOLOGY"

Braemar

THE FUTURE OF POSTSCRIPT. BY THE PRINTER THAT WILL TAKE IT THERE.

Two or three years from now, the typical laser printer will be a lot like the Business LaserPrinter™: small, light, with a SCSI connector for a hard disk, and inexpensive."

That's how *Publish!* described our Busi-

lishers' extend the font storage capacity of the BLP via a hard disk.

A Better Return On Investment.

Best of all, the BLP even takes better

What's more, we guarantee satisfaction. If after trying the BLP for up to 30 days you aren't completely satisfied, just return the printer and we'll cheerfully refund your money, no questions asked.



ness LaserPrinter (BLP), a true Adobe™ PostScript® printer for Macintoshes®, IBM®s® and IBM compatibles. We'd only add that the future has arrived ahead of schedule.

A Better PostScript Printer.

Simply stated, the BLP is a better way to translate the language called PostScript into the graphics, words and numbers people use to communicate in the workplace.

Better because the BLP lets you—or anyone else on your AppleTalk® network—produce high-quality text using 39 fonts (4 more than our nearest competitor).

Better because the BLP comes with expandable RAM (2 MB expandable to 4), which lets you increase print speed. Because it has a straight paper path that easily accommodates envelopes. And because it has a SCSI port, which lets desktop pub-

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.

care of your bottom line. In fact, you can buy a BLP for 34% less than a LaserWriter® II NT.

Someday, if *Publish!* magazine is right, other printers will offer all this. But if you prefer not to wait, use the toll-free number below to order the BLP today. Here's how.

Toll-Free, Hassle-Free, Risk-Free.

Ordering your BLP from GCC Technologies is simplicity itself. Just call 800-422-7777 between the hours of 9AM and 9PM on weekdays, or 10 AM and 4 PM on Saturdays. Our expertly trained staff will be glad to answer questions, provide technical support, and offer advice on choosing and getting the most out of any of our products. We'll also send you our free catalog.

When your order is received by 8:00 PM (EST), it will be shipped the same day via overnight delivery for only \$9.

One Year Warranty.

The BLP carries a full one year warranty on parts and labor (ask for details). We also offer repair service at any Xerox® carry-in service center, or at any one of hundreds of GCC Technologies dealers.

Business LaserPrinter \$3299.

For the name of the authorized GCC Technologies dealer nearest you, or

To Order, Call 800-422-7777.

We gladly accept MasterCard, Visa, American Express or your company's corporate purchase order.

 **GCC
TECHNOLOGIES**
Peripherals With Vision.™

Circle 422 on reader service card

Ad 920102

If you don't see exactly what you're looking for, just ask.



System Saver® Mac, \$99.95



Maccessories® SuperBase™, \$49.95



Maccessories Tilt/Swivel, \$29.95



Macintosh II Stand and Extension Cables, Complete Kit \$99.95, Separately \$29.95 to \$49.95



Master Piece® Mac II, \$159.95



Power Backer™ UPS's, \$399 to \$1,599, Network Interface, \$99.95

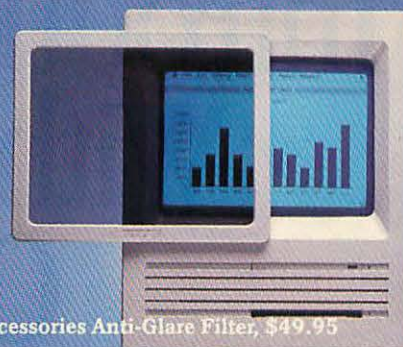


Turbo Mouse® ADB, Turbo Mouse Plus, \$169.95 each

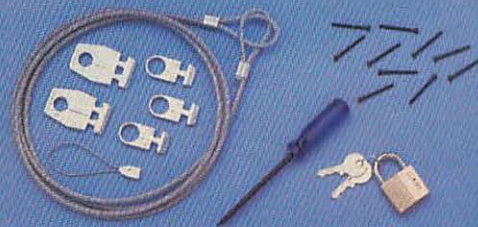


Large Screen
Anti-Glare Filters
For AppleColor™,
Radius™, and Sigma
Designs™ Monitors,
\$99.95 to \$199.95

Macintosh II
Monitor Stand,
\$99.95



Accessories Anti-Glare Filter, \$49.95



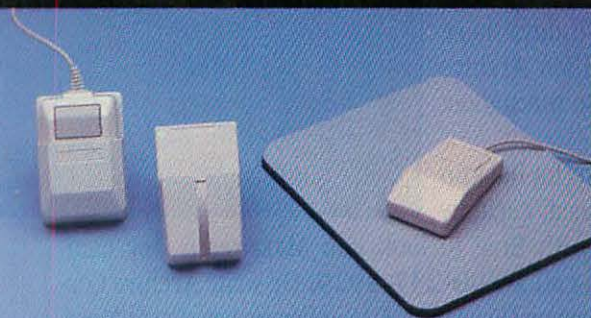
Apple® Security System, \$49.95



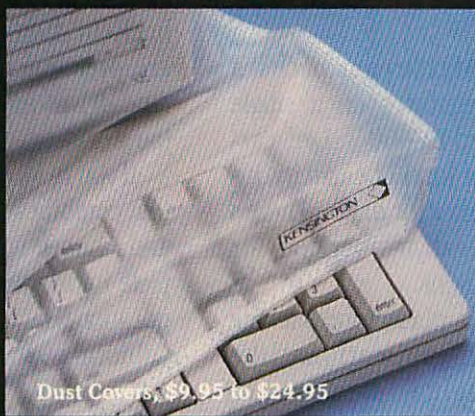
Keyboard Slideaway™, \$49.95



Universal Printer Stand, \$24.95



Mouseway, Mouse Pockets, \$9.95 ea.



Dust Covers, \$9.95 to \$24.95



Copy Stand, \$29.95



Accessories A-B Box, \$99.95

Chances are, we'll have it. Because, at Kensington, we're always finding ways to make your Macintosh® quicker and more convenient.

Our award-winning Turbo Mouse trackballs will make your Mac quicker with their automatic acceleration and advanced button features.

Our best-selling System Saver Mac will keep your Mac Plus cool, calm and collected with its quiet cooling fan, surge protection, and extra outlets.

And everything you see here will make your Mac more comfortable. Our Mac II Stand and Cables will get your Mac II off your desk and out of your way. And our Anti-Glare Filters are a sight for sore eyes — in every shape and size.

In fact, we've got so many good ideas, we couldn't fit them all in one ad. But we did manage to fit them in a free 20-page brochure, so call for yours today. Or ask about a dealer near you. 800-535-4242 or 212-475-5200. Or write to Kensington, 251 Park Ave. South, New York, NY 10010.

KENSINGTON 

*Setting new standards
of performance.*

Introducing Tape Backup With The Attributes Of All Three.



What does the MaxStream™ have in common

with the Concorde, a supertanker and the Golden Gate Bridge? Plenty, when you're talking about performance.

With speeds up to 6.75 megabytes per minute, it's the fastest tape backup available. It quickly reduces even the longest, most mundane backup chore into a simple, effortless task.

But don't think that means you give up accuracy for speed. Built-in error correction and data verification guarantee that the data you put on tape will be exactly the same when you restore it—all 150 megabytes.

That's right. MaxStream packs a whopping 150 megabytes on a single industry-standard DC600™ 1/4" cartridge. With that kind of capacity, it's like a supertanker for data. (There's also a 60 megabytes version for smaller applications.)

Either one is perfect for backing up high-end applications like graphics, imaging, database or CAD programs.

And of course, MaxStream works with every popular network. It's the one drive you can trust for backing up all the valuable data on a server.

LAN administrators will also appreciate MaxStream's software. It lets you back up an entire network at pre-programmed times, instead of having to rely on users to back up their data individually.

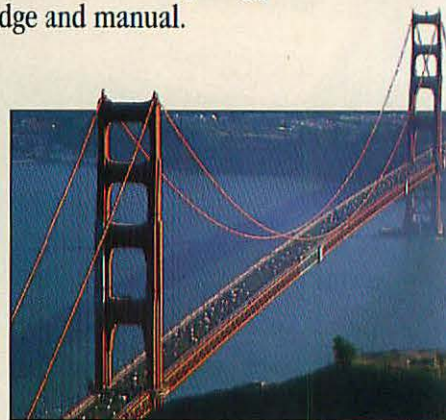
Even if you're not on a network you'll like our full array of backup and restore features as well as scripting, which allows for automatic, unattended backups. You can run an entire backup at night, or while you're at lunch.

MaxStream also bridges the gap between Macs and IBM PCs® by letting you use the same DC600 cartridge with both systems. With Archive's Universal Tape Format™ a tape from one of Archive's tape subsystems can be read and used by the other and vice versa.

MaxStream works with the Mac Plus, SE, II and IIX®. It plugs into the standard SCSI port, and comes with everything you need—cables, software, DC600 cartridge and manual.

Just as important, when you go with MaxStream, you're getting backup and support from the company that pioneered streaming tape technology back in 1980. Today, there are over one-million Archive tape drives in use throughout the world.

If you're looking for backup that combines speed, capacity and connectivity, it's time to look into MaxStream. For complete information call 1-800-237-4929. Or write Archive Corporation, Data Storage Division, 1650 Sunflower Ave., Costa Mesa, California 92626.



ARCHIVE
CORPORATION

Why trust your
data to anyone else?™



Circle 3 on reader service card

Archive is a registered trademark and MaxStream, Universal Tape Format and Why trust your data to anyone else? are trademarks of Archive Corporation.

Macintosh Plus, SE, II and IIX are registered trademarks of Apple Computer, Inc. IBM PC is a registered trademark of International Business Machines. DC 600 is a registered trademark of 3M Corp.

ART BEAT

by Deborah Branscum

This column examines the tools and the talent behind Macworld's graphics

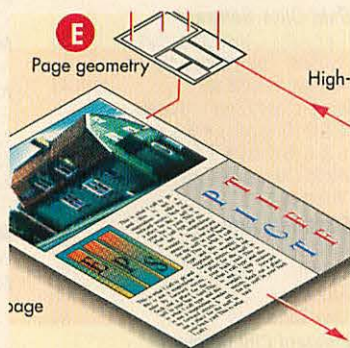
Artist: Senior design associate Arne Hurty joined *Macworld* earlier this year after winning the first Aldus FreeHand design competition. He began using the Mac and FreeHand in 1987 at Radian, an environmental consulting firm.

Tools: Macintosh II, slide scanner, Aldus FreeHand, image processing software.

How It Was Done: Hurty created three charts for our cover story to illustrate how different prepress systems work. For each chart he created icons, text, and sample pages within FreeHand. One nice effect is the black-to-white shadow under the page mock-up, produced by using a graduated fill underneath a tint box that will overprint the shadow.

Once most of the chart elements were in place, Hurty used a slide scanner to scan a color 35mm slide to complete the page mock-up. He saved the image as two EPS files. One file was a low-resolution, 36K image used by designers for placement. The second file was a high-resolution, 1.7MB image, and represented the quality of output generated by high-end systems.

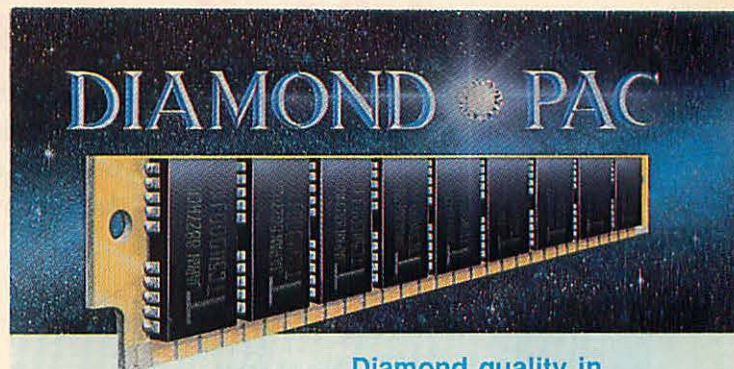
Hurty used a beta version of an upcoming image processing program to open the EPS files. He created process color separations and selected



halftone screens and values and saved the files. He also created two low-resolution color screen images, for placement and positioning.

Hurty placed the two low-resolution images into the FreeHand illustrations. There he stretched and rotated them. Because the images within the FreeHand chart are linked to the original scanned EPS files, any changes to the screen images are reflected in the larger EPS images output by the service bureau.

"What attracted me to FreeHand was its superior typographic capability," says Hurty. "It has an intuitive interface and I love the way you can access color editing through other dialog boxes." Still, the program has some drawbacks. "There are a lot of menus and submenus to accommodate all these features, and few keyboard shortcuts," he says. One workaround is using QuicKeys, a macro program that, according to Hurty, "nicely complements FreeHand's interface." ■



Diamond quality in SINGLE IN-LINE MEMORY MODULES for Mac Plus, SE, II, IIx

- 1,2,4, or 8 Megabytes
- Low Profile SMD CMOS
- Manufactured in USA
- Nationwide Distribution
- Easy to Install
- Lifetime Guarantee
- Static Protected
- Same Day Delivery

Expand your Mac memory by 1 to 8 megabytes with DiamondPac SIMM modules, the Mac's "best friend". The many facets of DiamondPac include state-of-the-art CMOS DRAM surface mount technology, 100% testing, "fail safe" installation instructions, and a lifetime guarantee. All combined to ensure your DiamondPac's are forever. Get the best quality SIMM modules, at competitive prices. Government & University PO's welcomed. Call Today.

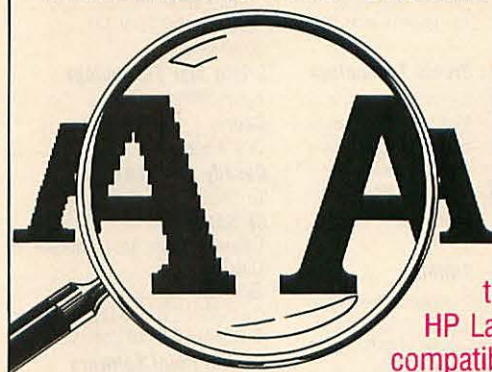


**AMERICAN MICRO
DISTRIBUTORS, INC.**

16897-D Algonquin, Huntington Beach, CA 92649
714/840-5560 MC VISA AMEX Discovery FAX: 714-846-0570
Mac is a trademark of Apple Computer Corp. DiamondPac is a trademark of AMDI

Circle 403 on reader service card.

THERE'S NO COMPARISON



**JetLink
EXPRESS™**

The ultimate
Apple®
Macintosh®
printer driver for
the HP DeskJet™,
HP LaserJet™, and HP
compatible laser printers.

JetLink Express employs the same leading-edge outline font technology used by PostScript® laser printers. This allows you to generate outline fonts at any point size from 3 to 127. This flexibility enables you to have font sizes and styles that suit your document, not a document that suits your font sizes and styles.

The JetLink Express offers you four different graphic print resolutions up to 300 dots per inch (dpi). The driver's draft mode allows you to use the printer's internal fonts and font cartridges.

So if you're looking for a printer driver with all the right features, we've got your number. Now all you have to do is dial ours.



GDT Softworks Inc.

P.O. Box 1865, Point Roberts, WA 98281
Suite 188-4664 Lougheed Highway, Burnaby, B.C. V5C 6B7
For inquiries: (604) 291-9121 For orders: 1-800-663-6222

JetLink Express and the GDT Starburst logo are trademarks of GDT Softworks Inc. DeskJet and LaserJet are trademarks of Hewlett-Packard Co. Apple and Macintosh are registered trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

Circle 439 on reader service card

Call for free context-sensitive help.

When you're in the middle of deciding what to get for your Mac, it helps to talk to someone who knows this amazing machine inside and out. We suggest you contact the Mac experts at MacZone. Even if you're not quite ready to order, we'll help you sort things out so you make the right decision when you *do* buy.



Zone Specials



Connectix Corp.
Virtual memory is here and the MacZone's got it! Now you can feed those memory hogs as much RAM as they can eat.
Virtual CALL



Linebacker
Sturdy, well padded codura nylon Mac bag with fitted shoulder strap. The only bag with a lifetime warranty.
MacBag see prices



Check Mark
3 full featured business accounting packages.
MultiLedger 255.
Payroll 187.
Cash Ledger 125.



Pro Plus Software
Look out Bulls and Bears, here comes the Mouse! Buy, sell, and analyze the stock market from your Mac via your modem.
Wall Street Investor ... 325.



Orchid Technology
The 9600 bps Fax and 9600 bps data modem for the Mac. Automatically sends or receives faxes in background mode.
MacFax CALL



SIMMs
Do it yourself memory upgrade?? No problem! Each set of SIMMs comes with a complete installation manual.
Call for current prices.



Timeworks
Interconnected HyperCard stacks helps you manage and control time, tasks, deadlines and expenses.
HyperWorks
Organizer CALL



Mac Envelope
The ultimate envelope and label printing software. Postal bar coding, import lists, bulk print, sort by ZIP, OCR and more.
Mac Envelope CALL

Software

A. Bonadio & Associates

Expressionist 2.03 78.

ACIUS

4th Dimension 2.0 CALL

Activision

Reports 1.2 69.

Adobe

Illustrator 88 297.

Streamline 238.

Adobe Postscript Fonts CALL

Affinity Microsystems

Tempo II 79.

Aldus

Freehand 348.

PageMaker 398.

PageMaker Color Extension 175.

Persuasion 348.

ALSoft

DiskExpress or MultiDisk 45.

Master Juggler 62.

Ashton-Tate

Full Impact 248.

FullWrite Professional 1.1 264.

Bedford

Simply Accounting 208.

Berkeley System Design

After Dark CALL

Stepping Out 2.01 51.

Borland International

Reflex Plus 188.

Turbo Pascal 1.1 67.

Turbo Pascal Tutor 1.0 55.

SideKick 2.0 67.

Bright Star Technology

Hyper Animator 1.5 98.

Caere

OmniPage 1.1 558.

Casady & Greene

QuickDEX 31.

CE Software

CalendarMaker, MockPackage, or

DiskTop Call

QuickKeys 1.2 64.

QuickMail 2.0 (1-5 Users) 174.

QuickMail 2.0 (10 Users) 255.

Central Point Software

Copy II Mac 7.2 20.

PC Tools Deluxe 42.

Check Mark Software

Cash Ledger 122.

MultiLedger 1.3 250.

Payroll 187.

Claris

FileMaker II 228.

MacProject II 377.

MacWrite II 179.

Claris Cad 624.

MacDraw II 305.

MacPaint 2.0 96.

SmartForm Designer 307.

Cricket Software

Cricket Draw 166.

Cricket Graph 1.3 114.

Cricket Presents 285.

Dantz Development

Retrospect 168.

DataViz

MacLink Plus w/Cable 4.0 135.

Deneba Software

BigThesaurus 53.

Coach Professional 114.

Canvas 2.0 158.

Dubl-Click Software

Calculator Construction Set 36.

WebPaint - bit mapped clip art

Any two volume set each 43.

World Class Fonts - ImageWriter Fonts

1 & 2 (Originals) • 3 & 4 (The Stylish)

5 & 6 (Giants) • 7 & 8 (Triples) 43.

World Class LaserType - Laser Fonts

Volumes 1 - 9 each 43.

Electronic Arts

Thunder II 49.

Studio/1 96.

Studio/8 308.

Disk Tools Plus 30.

Emerald City Software

Smart Art 1, 2, or 3 each 88.

Farallon

Timbuktu 30 Pack 1389.

Timbuktu Remote 193.

Timbuktu Single User 62.

Screen Recorder 130.

Traffic Watch 135.

Fifth Generation

Fast Back II 107.

PowerStation 2.5 29.

Pyrol 3.3 14.

Suitcase II 44.

Fox Software

FoxBASE+/Mac 2.0 259.

FoxBASE+/Mac Multi User 2.0 369.

FoxBASE+/Mac Runtime CALL

FreeSoft

Red Ryder 10.3 53.

Red Ryder Host 2.0 99.

Generic Software

Generic CADD Level 1 84.

Generic CADD Symbol Libraries CALL

Hayes

Smartcom II 3.0 87.

HJC Software

Virex 65.

ICOM Simulations

HypertMON CALL

TMON 2.8.2 88.

On Cue 1.3 34.

Informix

Wingz! 258.

Infosphere

Liaison 198.

Innovative Data Design

Dreams 268.

MacDraft 1.2b 144.

Insight Development

MacPrint 1.1 75.

Insignia Solutions

Soft PC 245.

Intuit

Quicken 1.5 39.

Jam Software

Smart Alarms Single User 54.

Smart Alarms Multiuser CALL

Kent Marsh

MacSafe or Night Watch 86.

Letraset

ImageStudio or ReadySetGo! 4.5 274.

LetraStudio 288.

Loop Software

Picture Book 45.

MacroMind

MacroMind Director 448.

Mainstay

Capture 2.0 CALL

MacFlow 3.0 CALL

MacSchedule 112.

N'cryptor 27.

TypeNow 19.

Meca

Managing Your Money 2.0 124.

Microlytics

GOfar 41.

Wordfinder 32.

Microseeds

INIT Picker 26.

Redux 51.

Screen Gems 40.

Microsoft

Excel 2.2 252.

File 2.0 128.

Mail CALL

PowerPoint 2.01 249.

Quick Basic 1.0 65.

Word 4.0 252.

Works 2.0 188.

Write 78.

Monogram

Business Sense 1.2 268.

Dollars & Sense 4.1 80.

Nolo Press

For The Record 28.

Will Maker 3.0 31.

North Edge

Timeslips III 169.

Odesta

Datadesk Professional 2.0 284.

Double Helix Release 2 337.

GeoQuery 1.0 198.

Olduvai Software

Read-It! 2.0 249.

Read-It! Personal 98.

MultiClip 55.

Paragon Courseware

Nisus 1.01 258.

QUED/M 104.

Personal Bibliographic

ProCite 178.

Postcraft International

Laser FX 113.

Power Up!

Fast Forms Construction Kit 89.

Preferred Publishers

DAtabase 72.

Vantage 55.

ProVUE

Panorama 1.1 202.

Quark

QuarkStyle 175.

XPress 2.1 495.

Sebastian Software

Image Grabber 24.

MacZone. Where the service is as good as the prices.

Or should that be, "Where the prices are as good as the service?" Either way, no one but no one gives you our unique combination of huge savings and free advice.

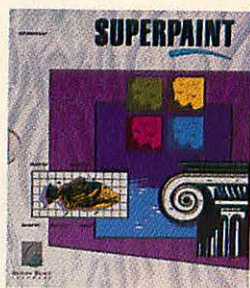
What kind of advice? You name it—help in determining which products to buy for your particular system, assistance with SIMM installation, network layouts and consulting.

Fact is, when you call the MacZone, you're connected with the most expert Mac experts this side of a telephone. People who know the Mac inside and out.

Of course, you also get our other high levels of service, such as \$3 overnight delivery, Zoner loaner hard drives, and our dedicated FaxOrder line.

All with prices to match—some of the best prices on Macintosh software and hardware that you'll find anywhere. And you'll find some of our very best prices right on this page.

So call now. And catch us with our prices down—and our service up.

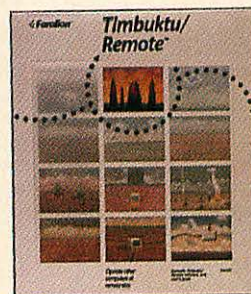


SuperPaint 2.0: \$124.

Bit-mapped painting program and an object-oriented drawing program in one. Dozens of paint tools, autotrace, a freehand tool for drawing editable bezier paths, and full support for color. A full graphics environment for professionals and novices alike.

Dolphin Disk Drives.

We think Dolphin is tops when it comes to Macintosh hard drives. Their quality is superb and their prices are unbeatable. These are just a few of the great Dolphin drives available. 44MB Removable: \$975. Sonar 600MB Read/Write Optical Drive: \$4,795. 80MB Int. for IIcx: \$798, 20MB Ext.: \$485, 30MB Ext.: \$525, 45MB Ext.: \$615, 60MB Ext.: \$689, 80MB Ext.: \$749, 100MB Ext.: \$985, 170MB Ext.: \$1,695.



Timbuktu Remote: \$189.

Timbuktu Remote lets you control or observe any Mac—including monitor-less file servers—from a remote computer. Ideal for classroom settings, training situations, or troubleshooting networked Macs. Runs on any network, from AppleTalk to Ethernet.



NEC 14" Color Monitor w/ Tilt/Swivel Base: \$655 RasterOps 264 32-bit Color Board: Mac II/IIx/IIcx: \$785. SE/30: \$1,038.

Now, add incredible 32-bit color to your Mac II or SE/30. There's a RasterOps 32-bit color board for any Mac II, as well as the SE/30. It works only with 13" or 14" monitors—we recommend the outstanding NEC 14" color monitor.



PLI Software: Call for Prices.

Everything you need to soup up your system: TurboOptimizer (disk de-fragmentation program), TurboBack (fast back-up program), TurboCache (speeds up your work), and TurboSpool (ImageWriter or LaserWriter print spooling).

Product Guarantees:

If you are not completely satisfied with a purchase, many of the products we sell come with a 30 to 60 day money back guarantee. Ask for details when you place your order.

1-800-248-0800

Intl: (206) 883-1975 Canada: 800-248-0344 FAX (206) 881-3421

Our savings are huge. Our advice is free.

Circle 70 on reader service card



Maximize your Mac at minimum expense.

What would it take to turn your Mac into a power machine? A hard disk? More memory? A modem? Scanner? Extended keyboard? Tilt stand? Bigger monitor? No matter what it is, chances are the Zone has it—and at a very attractive price. So call us toll-free at (800) 248-0800. And get the most out of your Mac for a minimum of money.

The Mac
Zone

Our savings are huge. Our advice is free.

Silicon Beach Software

Apache Strike 31.
Dark Castle or Beyond Dark Castle 29.

Sir Tech

Wizardry 35.

Software Toolworks

Hunt for Red October 31.

Sphere

Falcon 2.0 31.
Gato 1.4, Orbiter, or PT-109 26.
Solitaire Royale (B & W or Color) 19.
Tetris (Black & White) 19.
Tetris (Color) 22.

Spinnaker

Sargon IV 28.

Three Sixty

Warlock 29.

XOR Corporation

Lunar Rescue 33.
Mac Racquetball 36.
MacCourses 28.
MacGolf 34.
MacGolf Classic 53.
NFL Challenge 58.
Pro Challenge 28.
Road Racer 38.

Education

Bible Research Systems

The Word (KJV, NIV, NKJV, RSV) 164.

Bright Star Technology

Alphabet Blocks or Talking Tiles 29.

Brøderbund

Calculus, Geometry, or Physics 58.
Type! 19.

Davidson & Associates

Math Blaster 26.

Great Wave Software

KidsTime 25.
Number Maze 26.

Learning Company

Math Rabbit 32.
Reader Rabbit 2.1 32.

Nordic - MacKids

Alphabetizer, BodyWorks, Clockworks, CoinWorks, EarthWorks, FlashWorks, Lemonade Stand, Naval Battle, Preschool Disk 1, Preschool Disk 2, Turbo Math Facts, Word Search each 27.

Simon & Schuster

Typing Tutor IV 34.

Spinnaker

Typing Made Easy 25.

True Basic

Algebra, Arithmetic, Calculus, Discrete Mathematics, Probability Theory, TrueSTAT, Pre-Calculus/Trig. 33.

Music

Aesthetic Engineering

Music Mouse 47.

Ars Nova

Practica Musica 74.

Bogas Productions

Studio Session 48.

Super Studio Session 67.
Brass, Country, Heavy Metal, Sound Effects, or String Quartet 13.

Brøderbund

Jam Session 28.

Coda

Finale 475.
Mac Drums 30.
Perceive 49.

Electronic Arts

Deluxe Music Construction Set 83.

Farallon

MacRecorder 2.0 164.

Great Wave Software

ConcertWare Plus 38.
ConcertWare Plus MIDI 76.

Mark Of The Unicorn

Professional Composer 2.3 392.
Professional Performer 3.0 395.

Passport Designs

Click Tracks 309.
MasterTracks Jr. 99.
MasterTracks Pro 3.3 258.
MIDI Interface 95.
MIDI Transport 309.
Note Writer II 325.

Primera Software

Different Drummer 69.

Resonate

Listen 2.1 61.

Accessories

Abaton

Pro Point ADB 88.

Addison Wesley - Inside Mac

Volume 1, 2, 3, or 4 21.
Volume 5 23.
Inside Macintosh, X-Ref 15.
Macintosh Programming Secrets 19.

Bantam Books

Illustrator 88: Off. Designers Handbook 19.
Mastering Wingz 21.
Complete HyperCard Handbook 22.

DataDesk

Mac 101 Keyboard (for any Mac) 144.

Datashield

MacDirector 108.

Ergotron

MacTilt (for 512k, Plus, SE, SE/30) 67.
Mouse Cleaner 360 10.

Fujitsu

800k Disk Drive 155.

Golden Ribbons

ImageWriter II Ribbon - Multi Colored 8.
ImageWriter Ribbons - Black 4.

Kalmar Designs - Disk Cabinets

Teakwood (Holds 45 Disks) 14.
Teakwood (Holds 90 Disks) 21.
Teakwood (Holds 135 Disks) 31.

Kensington Microware

System Saver Mac Fan 64.
Turbo Mouse (for any Mac) 108.

Kraft

Joystick (for any Mac) 49.

Mac Packs - Gray, Navy, or Wine

ImageWriter Bag 45.

Mac Plus/SE Bag 55.

Mac SE Bag XT (Extended Keyboard) 69.

Mac Zone

7 Outlet Noise & Surge Protector 24.
Mouse Pad - Black, Blue, Gray, or Red 6.
SCSI Tester 39.
Mac Tool Kit w/Grounding Strap 15.

Maxell

60 Mb Backup Tape (C1600h) 21.
150 Mb Backup Tapes (Cs-600xd) 31.

Mobius

Fanny Mac (Beige or Platinum) 59.

MSC Technologies

A+ Mouse (512k & Plus) 64.
A+ Mouse ADB 84.

Orange Micro

Grappler C/Mac/GS 77.
Grappler Mac LQ 102.
Grappler Mac LS 102.
Grappler Spooler 38.

Sony Disks

Double Sided - 10 Pack 14.
Double Sided - Bulk (Min. 50) ea. 1.29
High Density - 10 Pack (1.44 Mb) 34.
High Density - Bulk (Min. 50) ea. 3.25
DC 2000 40 Mb Tape 23.

Targus

Deluxe Mac SE Ext. Bag Black 72.
Mac/SE Bag Black 58.

Williams & Macias

Labels, 216 (ImageWriter) 15.
Labels, 216 (LaserWriter) 19.
myDiskLabeler (ImageWriter) 28.
myDiskLabeler (LaserWriter) 33.
Sticky Business 95.

Ordering Information

Our phone lines are open for orders:

Monday - Friday: 6AM to 8PM PST

Saturday: 8AM to 5PM PST

Products ordered before 7:30pmEST (4:30pm PST) shipped the same day.

We accept VISA, MASTERCARD, AMERICAN EXPRESS & OPTIMA Card. No surcharge added.

- If we must ship a partial order, we never charge freight on the shipments that complete the order (U.S. only).
- Your credit card will not be charged until products ship.
- Personal and company checks under \$1,000 clear immediately. Allow one week for checks over \$1,000.
- Fortune 1,000 and Government checks clear immediately.
- Fortune 1,000, Government, School and Institutional PO's clear immediately.
- No sales tax (except WA residents add 8.1% to total including shipping).
- Loan drives subject to availability.
- All prices subject to change without notice.
- All items subject to availability.

Shipping Information

- Shipping: \$3.00 for Federal Express Standard Overnight Service. Packages under 6 lbs. overnight, over 6 lbs. second day air.
 - APO/FPO orders shipped 1st class mail, charged by weight.
 - Overseas: We ship anywhere in the Free World, using quickest & least expensive methods possible. Second day air service available to most of Europe, Australia, & Japan.
 - Software and hardware is subject to manufacturer's warranty. Defective items will be replaced immediately with like item.
 - All returns must have an authorization number.
- ©1989 Multiple Zones International
The MacZone is a trademark of Multiple Zones International
18005 NE 68th Street, Suite A100, Redmond, WA 98052

Zone Specials

XOR Corporation

The year is 2059. Rebels have stolen the ICD. Your mission - work through the enemies defense and save the colonies.

Lunar Rescue 32.

Quark

Page layout software for professionals. Easily imports color graphics, incredible type & font control, top quality output.

XPress CALL

Osicom

High performance hard disks at an affordable price! Pre-formatted with current system software. Just "plug and play".

MacBest see prices

Blyth Software

Powerful multi-user relational database. Used by the MacZone for our demanding information processing needs.

Omnis 5 395.

Nordic

Make Mac a teacher with infinite patience with MacKids educational software for pre-school to school age users.

MacKids CALL

Ergotron

Is your mouse behaving erratically? A thorough cleaning with Mouse Cleaner 360° will improve its performance.

Mouse Cleaner 360° 10.

Centron

Baccarat Master, Blackjack Ace, Craps Master, Poker Master, Roulette Master, all in one package. Learn what it takes to win big!

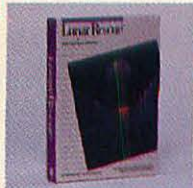
Casino Master CALL

Best Data

Complete communications package with 2400 baud modem & DIN-8 modem cable.

Smart One 2400 145.

...w/Red Ryder 179.



Your Purchase Order is our command.

If you buy Macintosh hardware or software (or both!) for a university, school district, college, government agency, medical facility, or other institution, your P.O. is all you need to place an order with us. Just mail or fax it to us (our FaxOrder line is (206) 881-3421) and we'll ship your order immediately via Federal Express overnight service.



Silicon Beach Software

Digital Darkroom	249.
Silicon Press	48.
Super 3-D 2.0 (Color)	297.
Super Card	128.
Super Paint 2.0	128.

SmethersBarnes

Prototyper 2.0	145.
----------------------	------

Software Ventures

Microphone 1.5	109.
Microphone II 3.0	215.

Solutions

backFax	124.
Curator	74.
SmartScrap & The Clipper 2.0	45.
Super Glue 2.0	61.

SuperMac Software

PixelPaint 2.0	224.
Disk Fit 1.5	53.
Network Disk Fit	198.
Sentinel 2.0	88.
SuperLaserSpool 2.0 - Single User	85.
SuperSpool 5.0	53.

Survivor Software

MacMoney 3.02	60.
---------------------	-----

Symantec

More II	249.
Just Enough Pascal	48.
Lightspeed C 4.0	CALL
Lightspeed Pascal 2.0	83.
S.A.M. or S.U.M.	65.

Symmetry

Picture Base 1.2 & PB Retriever	54.
Acta Advantage	64.
HyperDA 1.1	34.

T/Maker

WriteNow 2.0	108.
--------------------	------

TENpointO

Focal Point II	118.
OpenIT!	CALL

TML Systems

TML Pascal II 3.0	58.
TML Pascal II 3.0 (w/MPW 3.0)	112.

TOPS

InBox Personal Connection 2.2	42.
InBox 2.2 Starter Kit	148.
NetPrint 2.0	117.
TOPS (DOS Version)	117.
TOPS (Mac Version)	145.

Traveling Software

Lap-Link Mac 2.0	81.
------------------------	-----

True Basic

3-D Graphics Toolkit	45.
Business Graphics Toolkit	45.
Scientific Graphics Toolkit	45.
True Basic 2.01	55.

U.S. Micro Labs

FontSizer	69.
-----------------	-----

WordPerfect Corp.

WordPerfect 1.02	184.
------------------------	------

Working Software

QuickLetter	74.
-------------------	-----

Xerox (Datacopy)

AccuText	745.
----------------	------

Zedcor, Inc.

ZBasic 5.0	98.
DeskPaint/DeskDraw 2.0	65.

Hardware

Abaton

InterFax 12/48 Fax/Modem	305.
Quickstep Page Printer	3295.
Scanner 300/GS (8 Bit - 256 Grays)	1495.
Scanner 300/S (4 Bit - 16 Grays)	1198.

American Power Conversion

UPS 110SE	325.
-----------------	------

Best Data

Smart One 2400 Baud Modem	145.
Smart One 2400 w/Red Ryder	179.

CDC - Internal Hard Disks

CDC 135 Mb (3 1/2" Drive)	1795.
CDC 172 Mb (3 1/2" Drive)	1995.

David Systems

Please call for prices and information on Twisted Pair Ethernet equipment.

Dayna Communications

Complete line of DaynaFile MS-DOS to Mac Drives available Call for prices

Dfo 100 Single Drive (360kb)	525.
Dfo 104 Dual Drive (360kb/1.44mg)	810.

Daystar Digital - Accelerators

LT 200 MC LocalTalk Board	279.
LT 200 PC LocalTalk Board	179.

Macintosh SE Accelerators

68030 - 16MHz	975.
68030 - 25MHz	1595.
68030 - 33MHz	2395.

Macintosh II & Ix Accelerators

68030 - 33MHz (w/Math Co Pro.)	3898.
68030 - 40MHz (w/Math Co Pro.)	4695.
68030 - 50MHz (w/Math Co Pro.)	5495.

Dolphin - Hard Disk Drives

Dolphin 80-Ilcx Internal	799.
Flipper 44 Mb Removable	1075.
Sonar 600 Mb (Read Write Optical)	4795.

Dove - Upgrades & Accelerators

MacSnap 524E (512K to 1 Mb)	185.
MacSnap 524S (512K to 1 Mb w/SCSI) ..	240.
MacSnap 548 (512k to 2 Mb)	432.
MacSnap 548E (512K to 2 Mb)	419.
MacSnap 548S (512K to 2 Mb w/SCSI) ..	479.
SCSI Port Adapter	108.

Marathon 020 - Mac SE Accelerator

MSE1, MSE2, MSE3, or MSE4 CALL

Marathon 030 Accelerators

For Mac II & Ix - 32MHz	975.
For Mac SE/30 - 32MHz	995.

FastNet Ethernet Products

FastNet SCSI CheaperNet	749.
FastNet SE	365.
FastNet SE/30	375.
FastNet III	365.
FastNet II Intelligent Controller	545.
FastNet AE	1249.
FastNet FI-1 Ethernet LAN/68020	1249.
Accelerator SE	895.

Everex

EMAC 60t (Tape Backup)	745.
EMAC 150mb Tape Backup	1345.
EMAC MD2400 Baud Modem	220.

Farallon

PhoneNet - DIN-8 or DB-9	32.
PhoneNet - DIN-8 (10 Pack)	220.
Repeater	298.
Star Controller	1145.

Incomm

Midget 2400 ME (MNP Class 4) ...	198.
Midget 4800 E (MNP Class 5)	225.
Midget Internal 2400 Baud Mac II ..	199.
Turbo9600V.32BaudModem	655.

Logitech

Scan Man	339.
----------------	------

Motorola - Math Co-Processors

68882 - 16MHz	293.
68882 - 25MHz	425.
68882 - 33MHz	695.

NEC

CD ROM Drive	845.
MacSync 14" Color Monitor	675.

Nuvotech

Turbo Net - DIN-8 or DB-9	21.
Turbo Net ST - DIN-8 or DB-9	30.

Orchid Technology

Mac Sprint II, Cache Card	249.
MacFax Modem (9600/9600)	448.

Osicom Technologies

MacBest 30EXT	525.
MacBest 40EXT	589.
MacBest 60EXT	685.
MacBest 80EXT	745.
MacBest 170EXT	1695.
MacBest 150 Internal Mac II	1398.
MacBest 170 Internal Mac II	1595.
MacBest 300 Internal Mac II	1945.
MacBest 600 Internal Mac II	2885.

PLI (Peripheral Land, Inc.)

Infinity 44 Turbo Removable	1165.
Infinity 44/44 Turbo Removable	2145.
TurboFloppy 1.4	325.

Quantum - Internal Hard Disks

Quantum 40	439.
Quantum 80	790.
Quantum 105	998.

RasterOps

ClearView Monitor Mac SE	1595.
w/16MHz Accelerator Board	1249.
ColorBoard 108+	1439.
ColorBoard 108+ (for SE/30)	4295.
ColorBoard 224 (32 Bit Color)	795.
ColorBoard 264 (32 Bit - Mac II)	1054.
ColorBoard 264 (32 Bit - SE/30)	3398.
RasterOps/Trinitron 19"	1995.
TrueCapture 324	2398.
w/Composite Video Option	2398.

Shiva Corporation

NetBridge	299.
NetModem V2400	457.
NetSerial	287.
TeleBridge	349.

Sony

14" Color Multiscan Monitor	795.
-----------------------------------	------

Summagraphics

Bit Pad Plus (12 X 12 Tablet - ADB)	324.
---	------

Supra Corp.

Supra Modem 2400 Baud	139.
-----------------------------	------

Syquest

Infinity 44 Cartridges	112.
------------------------------	------

Taxan

Crystal View 19" B & W Monitor	1395.
for SE, II, Ix, Ilcx, & SE/30	1395.

Telebit

T-1000 9600 BPS Modem	699.
T-2000 19,000 BPS Modem	1299.

T-2500 V.32 19,000 BPS Modem	1299.
------------------------------------	-------

Thunderware

Lightning Scan	405.
ThunderScan 5.0	187.

TOPS

TOPS FlashBox	123.
Flash Card (for TOPS DOS)	165.
TOPS Repeater	128.

U.S. Robotics

9600 HST Baud Modem	685.
---------------------------	------

Xerox (Datacopy)

Datacopy 730GS (Gray Scale Scanner) ..	1575.
--	-------

Entertainment

Access Software

World Class Leader Board 4.0	27.
------------------------------------	-----

Accolade

Mean 18, Hardball, or 4th & Inches ..	27.
---------------------------------------	-----

Activision

Cosmic Osmo	45.
Manhole	29.

Brøderbund

Ancient Art of War or War At Sea	26.
Autoduel, Moebius, or Shufflepuck ..	23.
SimCity 1.1	27.
Where in the World or Where in the U.S.A. Is Carmen Sandiego? ...each	27.

Bullseye Software

Ferrari Grand Prix or P-51 Mustang ..	31.
---------------------------------------	-----

Casady & Greene

Crystal Quest 2.2	25.
Crystal Quest 2.2 w/Critter Editor	41.

Centron

Casino Master B & W	44.
Casino Master Deluxe Color	49.

Data East

Super HangOn	26.
--------------------	-----

Discovery Software

Arkanoid	26.
----------------	-----

Electronic Arts

Bard's Tale	32.
Chessmaster 2000	27.
Chuck Yeager's Advanced Flight Trainer ..	31.

Mediagenic

Might & Magic	35.
Quarterstaff	29.
Universal Military Simulator	29.

MicroProse

Pirates!	32.
----------------	-----

Microsoft

Flight Simulator 1.02	32.
-----------------------------	-----

Miles Computing

Fool's Errand	31.
Harrier Strike Mission II	31.
Puzzle Gallery 'At The Carnival'	27.

Mindscape

Aussie Joker Poker, Balance Of Power ..	1990, Colony, Crossword Magic, Deja Vu, Deja Vu II (Lost In Las Vegas), Gauntlet, Shadowgate, Trust & Betrayal, Uninvited	each 29.
---	---	----------

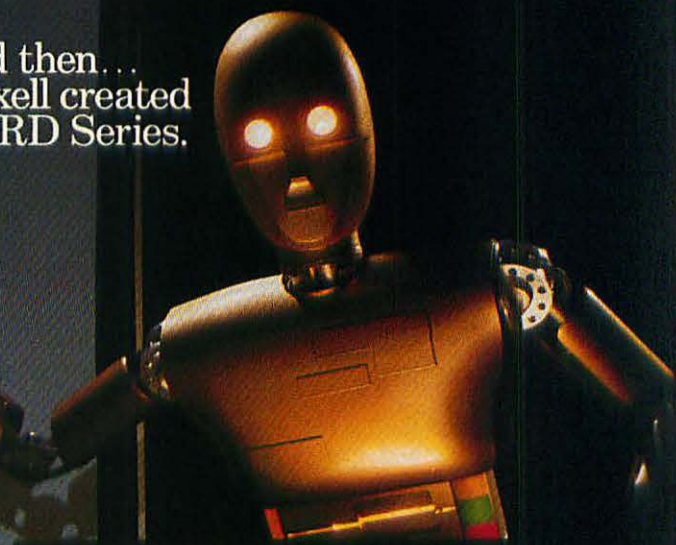
Primier Technology, Inc.

NetTrek or Strategic Conquest 2.0 ...	34.
---------------------------------------	-----

Shodan

Leprechaun	36.
------------------	-----

And then...
Maxell created
the RD Series.



The
Evolution
of the
Floppy Disk

Maxell Corporation of America, 22-08 Route 208, Fair Lawn, NJ 07410

Never before has this level of Reliability
and Durability been available in floppy disks.
Introducing the new RD Series from Maxell.
Twice the durability of the disks you're now using.
Twice the resistance to dust and dirt.
And the RD Series is ten times more reliable
than conventional floppy disks.
The Gold Standard has always meant maximum
safety for your data. Now it means even more.



maxell
THE GOLD STANDARD

Hacker Hell

When shareware
becomes a free-for-all

by Steven Levy

Poor Robertson Reed Smith. While in charge of the computing department for Macy's department store in San Francisco, he was infected by HyperCard fever and began working on a set of scripting tools after hours. After a number of all-night hypersessions, Smith finally finished his masterwork, which he released to the bulletin boards as Stack Starter. This was a marvelous collection of resources, buttons, sounds, and icons, many of them animated. Best of all, the program allowed even novice scripters to add these delights to their personal stacks.

Smith wanted many people to reap the advantages of his routines; although he copyrighted his work, he distributed it freely, with the sole caveat that he did not want his effort to find its way into commercial software. "I wanted it shared," he says. "If it became commercial, people might feel they couldn't use it."

So why do we call this generous and creative fellow *poor* Robertson Reed Smith? Well, one day he heard some shocking news. Someone told him that parts of Stack Starter were included in a commercial product called 101 Buttons and Scripts, published by a company

called Individual Software. Smith bought a copy of the \$70 product and, indeed, found many of his icons and doodads in the program. The fact that the package gave him credit for the work he'd done was small comfort; he certainly didn't recall authorizing Individual Software to use his stuff.

Worse, the documen-

tation encouraged users to take anything on the disk and use it in commercial software—exactly what Smith didn't want.

Smith hired a lawyer to write a letter to Individual Software, asking the company to stop using his work. He made other demands of the company, ranging from reimbursement for legal fees to placing ads

in trade magazines informing users of the situation. The company eventually met some of his demands, and version 1.1 of 101 Buttons and Scripts has none of Smith's work.

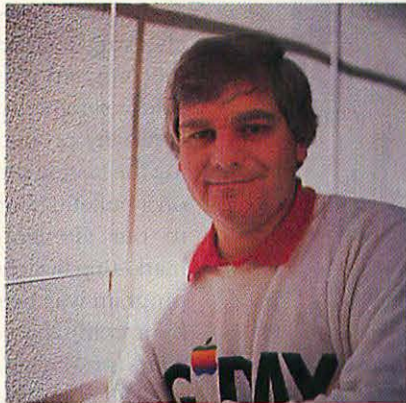
But Smith is unhappy that no advertisements were placed. He sees that the damage has been done—his icons appear in numerous stacks, some of them copyrighted by others. He's even sat through product demos at user group meetings where developers showed programs that used his work. What should have been an invigorating experience for him—sharing his work with others in the spirit of altruism and HyperCard idealism—has been a terrific disappointment.

STACKING THE DECK

One of the recurrent joys of the Macintosh software community is the rich bounty of goods distributed by an ad hoc samizdat consisting of bulletin boards, user group disks, and informal networks of pass-along. But there are problems with this charming underground. As this case shows, the unauthorized redistribution of programs is one of them.

As I investigated the issue, it became clear that these are not simple cases of heroes and villains. Take the Stack Starter incident. To be sure, Robertson Smith was wronged. But after talking to the presumed villains who nabbed his work, I am not prepared to call them ill-intentioned. The key figure in this turns out to be a person much like Smith, a HyperCard fanatic named Craig Ragland who runs a small company in Seattle called Interactive Design. His impetus was virtually identical to Smith's—compiling a toolkit to aid prospective stack makers. His approach was different, though: he planned a commercial product (though a relatively inexpensive one) that would make use of some of the hot tools being distributed over the nets by authors like Smith. Working with a publisher called Macropac, he began collecting the components of what

(continues)



Robertson Reed Smith, shareware author.

DRAKE SOREY

would become 101 Buttons and Scripts. Among the people he spoke to was Smith.

But apparently the conversation was mutually misinterpreted. Ragland says he felt Smith gave him a verbal go-ahead to use stuff from Stack Starter. Smith says Ragland expressed vague interest in using some of Stack Starter, and left only with a promise to follow up in writing. In any case, Ragland did not send any paperwork to Robertson Smith, an omission for which

he accepts responsibility. "A large part of the blame falls on my shoulders for not being organized," he says.

Things became more complicated when the putative publisher of 101 Buttons sold its catalog to another company, Individual Software of San Carlos, California. Its president, Jo-L Hendrickson, had no idea that part of the software he was about to sell actually belonged to Robertson Smith; the first he heard of it was in the

letter from Smith's lawyer. He says he immediately had the software rewritten, but he did not think it was necessary to meet all of Smith's demands.

Everybody is unhappy. Smith feels that not enough was done to notify the people who bought the first version. Hendrickson feels he acted responsibly, and that Smith should stop griping, already. Ragland feels a little guilty for not being more professional. "I wish I had a magic wand to change everybody's version to the right one," he says. "I had the purest motivations—to point to a great product."

Ragland's lament has the ring of truth to it. Why not give exposure to software that, after all, was originally offered to the underground in an attempt at the widest distribution possible? Well, for one thing, not all authors want a "real" publisher to handle their work. And when publishers assume that anything they find on bulletin boards is fair game for distribution, the situation is ripe for misunderstanding.

THE CASE OF SCSI TOOLS

Take the case involving Personal Computer Peripherals Corporation (PCPC), which makes the popular MacBottom hard disk. To add value to its drives, the company produced a utility called SCSI Tools, with some neat optimization and checking techniques. Besides providing the program free with each drive, PCPC sold it separately. This was fine, until the company produced an upgrade and during the testing process placed the software on a bulletin board. "It subsequently came to our attention," says the company's marketing honcho, Robert Leeds, "that the program was being offered on a disk sold by a company selling 'Almost Free Software for Macintosh Computers.'"

The company was Educorp in Solana Beach, California, a business that sells, at low prices, hundreds of disks full of Macintosh software, mostly public domain and shareware programs. PCPC quickly issued a letter asking the offending reseller to stop distributing its program, and to notify those who purchased it that they were holding an unauthorized copy of a proprietary program.

(continues)

Introducing The NEW FIRST NAME in POWER MACINTOSH PRODUCTS

POWER

QuickKor
DESIGN LABS, INC.

WE ADD QUICKKOR SPEED POWER AND VALUE TO YOUR MAC PRODUCTS

WE'LL SHIP YOUR ORDER FAST! CREDIT CARDS C.O.D.s AND LEASES—OK!

COMPARE OUR PRODUCTS, ATTITUDE, PRICING, WARRANTIES & SUPPORT... WE'RE YOUR MAC BRORE!

SEE OUR SYSTEM PACKAGE AD ON PAGE 58

Mac Friends

Call our System Designers for a complete package to meet your specific computing needs!

Available EXCLUSIVELY from America's Largest MAC ONLY STORE!

Call NOW for complete system package price quote!

TOLL FREE 800# 331-1322

PERIPHERALS: HARD DRIVES, KEYBOARDS, POSTSCRIPT LASER PRINTERS, MONITORS, WIDE-CARRIAGE PRINTERS, MODEMS, SCANNERS & Much more!

© COMPUMART, INC. 1989 #7.1 DEALERS WELCOME

Circle 109 on reader service card.

CANVAS™ 2.0 BEATS MACDRAW™ II

MACDRAW II
LIST PRICE \$395.00



MACUSER MAGAZINE NOVEMBER, 1988

Key Features:*

- All the standard drawing tools
- Unlimited layers
- Ultra-fine hairlines
- Editable arrowheads
- Smooth polygons
- Object libraries
- ± 32x magnification/reduction
- Text rotation
- High precision
- 8 available colors
- Auto-dimensioning of lines

CANVAS 2.0
LIST PRICE \$299.95



MACUSER MAGAZINE APRIL, 1989

Key Features:*

- All the standard drawing tools
- Unlimited layers
- Ultra-fine hairlines
- Editable arrowheads
- Smooth polygons
- Object libraries
- ± 32x magnification/reduction
- Text rotation
- Much higher precision
- 16.7 million available colors
- Auto-dimensioning of lines & arcs
- Join & split smooth curves
- PostScript® gray scales in 1° increments
- Continuous Bezier Curves
- Area & perimeter calculations
- Powerful Auto-Duplication options
- Central Object Control dialog
- Skew, perspective & distort effects
- Tear-away rulers
- Magnetic guide lines
- Complete set of bitmap editing tools
- Import & export of TIFF files
- Auto-tracing of imported bitmap images
- 72-2540 DPI. bitmap resolution
- PixelPaint™ compatible color palettes
- Editable, micro-adjustable airbrushes
- Full-feature DA version included.

5 MICE. NO WAITING.

MacDraw owners: Trade up to Canvas 2.0 for just \$99. Simply send your MacDraw Master Disk to Deneba at the address shown below, along with check or credit card info (card #, issuer, expiration date & signature).

We'll send you Canvas 2.0. The new big cheese in drawing programs.

If you want to see the Canvas difference for yourself, send us \$995 to receive a fully-featured Demonstration Copy.

Deneba
SOFTWARE

3305 Northwest 74th Avenue Miami, Florida 33122

1-800-6CANVAS In Florida: (305) 594-6965

© 1989 Deneba Systems, Inc.

All product names mentioned are trademarks of their respective holders.

*Partial list

Circle 346 on reader service card

This occurred in October 1988. In April of the following year, at the Macworld Expo in the nation's capital, Leeds said he saw an Educorp catalog and was dismayed to discover that it still listed SCSI Tools.

I called the founder and president of Educorp, an articulate fellow named Vahe Guzelimian, who submits that his company performs a useful service. He charges an average of \$5.72 for a floppy disk that

might have ten programs on it, mostly shareware and public domain programs. Educorp has a reputation for having the most extensive and current collection of software from the underground (an estimated 10,000 programs), and its sources range from bulletin boards, to author submissions, to users who send in stuff they come across. Guzelimian insists that despite paying a fee for the disks, Educorp buyers pay their shareware charges

at least as often as those who receive the software through other means. And if Educorp makes a small profit, why not? "We work very hard, and we do a very good job," he says. But this raises questions. Is Educorp careful when redistributing software, and are the authors always consulted?

"It's a small problem," Guzelimian says, admitting that "periodically" authors find Educorp distributing their software against their wishes, or at least without permission. In the case of SCSI Tools, Educorp pulled the program immediately, he says.

Still, I find something troubling about the methodology of a company like Educorp, which routinely redistributes programs for profit, often without consulting the author. Guzelimian says that before using a program, his company will closely examine the dialog box to see if the author specifically forbids redistribution. If in doubt, he will attempt to contact the author. This is sometimes a difficult task, because often the only clue to the author's whereabouts is an address on some obscure E-mail system. But usually Educorp has no contact with the author. "Our policy is that if we had to write a letter to every one of the seven or eight thousand people whose programs we distribute, it would take us at least one more employee, cost us more, and cost our customers more," says Guzelimian.

Some people think that expense would be well justified. Certainly a shareware author named Mark Chally is among them. He cried foul when he discovered that his menu-customizing utility, HexFlags, was included in an Educorp offering. He says that when he contacted Guzelimian to demand its removal, he did not get immediate satisfaction. Guzelimian points out that the utility was labeled "WhoCaresWare," so as far as he was concerned, there was no indication that Chally would object to distribution. Both parties admit there was some misunderstanding. Chally has gone public with his complaints, posting them on bulletin boards. "All we probably did was misunderstand his intentions," says Guzelimian. "He asked us to remove the program and we did."

(continues)

Nisus breaks the word barrier.

Mike Doerr: Fighter pilot, Del Mar, CA
Business: Aimstar Corp., Aerospace R&D
Word Processor: Nisus™

Maneuverability. It's what you want in a fighter plane and it's what I get with the Nisus word processor.

My company does a lot of R and D on aircraft survivability. That means a lot of reports, a lot of technical graphics. Imagine my surprise when I didn't have to put all the graphics on one page. When I needed a figure or a table, Wham! I just put it right into the text. Now, when the text is done, the graphics are done.

The macros that come with Nisus are so easy to use, but if you want to be a tech-head just go ahead and program your own. Then you can really fly. Talk about powerful! Take the unlimited undos. They save a ton of time.

Thanks to Nisus, we're putting out better papers than ever. No doubt about it, Nisus is a big boost to my business survivability.

Nisus (ni' sus): Footnotes/endnotes, 10 clipboards, thesaurus/spelling checker, Easy Grep, index all/find indexed word, mail merge, open Nisus files with any word processor, automatic repagination, text pattern search/replace, 32,000 undos, Zap Gremlins, user styles, tile windows.

PARAGON
concepts, inc.

We make good ideas work.

990 Highland Dr., Suite 312
Solana Beach, CA 92075
(619) 481-1477 Outside CA (800) 922-2993

Circle 253 on reader service card

OrangePortTM

Lets Talk...

with Hewlett Packard® DeskJet™ printers*; AppleFax™ Modems; Epson® compatible printers**; Hewlett Packard-compatible laser printers*; Apple® Personal Modems; many other standard peripheral devices.

Making the Right Connections

The new OrangePort lets your whole Macintosh AppleTalk network use your peripherals which may currently be tied up by a single Mac or PC. Just plug the OrangePort into your network like any other device, set it up once, and put that printer, modem or plotter to work for the entire office. This could save you thousands of dollars in peripheral purchases, as well as unclutter individual desktops and workspaces. OrangePort is also fully compatible with Orange Micro's line of Grappler interfaces, making hundreds of popular printers AppleTalk compatible.

Simple Networking?

OrangePort has been specially engineered to suit your needs. Installation is fully menu driven, so you

don't have to figure out a lot of technical information. In fact, most popular devices are listed by name. This means automatic installation to all the right specifications. The OrangePort even manages and queues multiple users just like a dedicated network device. If it works on your Mac, OrangePort will bring it to your network.



Painless Investment

With all this compatibility, you're probably expecting a lofty price tag.

Surprise. OrangePort carries a price tag of under \$280. So what are you waiting for? Visit your Apple dealer and see how OrangePort lets your AppleTalk talk.

*Using Grappler LS or Grappler LQ printer interface

**Using Grappler LQ or Grappler C/Mac/GS printer interface

Grappler and OrangePort; Apple, Macintosh, AppleTalk, and AppleFax; Epson; Hewlett Packard and DeskJet; are trademarks or registered trademarks of Orange Micro, Inc.; Apple Computer, Inc.; Epson America, Inc.; and the Hewlett Packard Co., respectively.



Orange Micro[®]
inc.

1400 N. Lakeview Ave., Anaheim, CA 92807
(800) 223-8029, In CA (714) 779-2772

© Orange Micro, Inc., 1989

Circle 82 on reader service card

This face will change the face of electronic publishing.



The beautiful reproduction you're looking at is the direct product of electronic publishing. Surprised?

The photo is by Andrew Unangst, renowned for the graphic beauty of his work. The unprecedented resolution of this page is by the Nikon LS-3500 Film Scanner, soon to be renowned for the graphic beauty of its remarkable, high definition detail and color fidelity.

Unangst worked with a Nikon F3. The LS-3500 worked with a Mac® II. But any MS-DOS® or UNIX®-based system would have been equally adept.

The original was a 35mm positive. But a 35mm negative, color or monochrome would have worked brilliantly, too.

The crisp enlargement is the result of a scanning resolution that's far superior to any previously possible. A precision Nikon lens was conceived specifically for the task. The scanner has resident intelligence so operation is effortless. And our proprietary color separating software can be used easily by your receptionist and creatively by your Da Vinci's. All with unmatched precision, control and economy.

The machine is about half the size of a Mac. And goes for about what it now costs you merely to compose film seps for a couple of ads just like this one. But then, they could never be quite like this one.

Don't just take what we've said at face value. Find out more by writing: Nikon Electronic Imaging, Dept. EI-B, 101 Cleveland Ave., Bayshore, NY 11706.



Nikon
ELECTRONIC IMAGING

© 1989 Nikon Inc.

Mac® II is a registered trademark of Apple Computer, Inc. MS-DOS® is a registered trademark of Microsoft Corporation. Unix® is a registered trademark of AT&T.

Circle 268 on reader service card

A BINARY BIND

As problems go, unauthorized redistribution of publicly distributed software is not as alarming as, say, the demise of the rain forest. But I think that the problem is significant, inasmuch as it points to the increasing ambiguity of intellectual property rights in an electronic age. The legal rights of the parties are often unclear. Guzelimian told me that his biggest problems come not with reluctant shareware authors, but with things like fonts. Who can tell if anyone holds a copyright on them? Then there are problems in distributing scanned images. Do the original pictures belong to the individuals who scanned them, or were they taken from copyrighted photos and drawings?

It's easy to say that people are entitled to credit and remuneration for their work, but in a dawning age of instant information transfer, how freely should we be able to move digits around? Because in this tremulous new information age, both ideas and creations are bound into binary bits.

Meanwhile, this is what Robertson Reed Smith has learned from his experience: "Nobody respects your rights in software unless you charge money for it. What kind of incentive is there for a person to try to do the best job he can on a piece of software and make it available free of charge, if others simply take it and put their names on it?"

As this column went to press, Guzelimian announced a new Educorp policy: The company will contact shareware authors before redistributing their products "in every case where there's an address given," he says. "If the authors don't respond, we'll assume they want it distributed."

The last word on this has yet to be written, and it is only one issue in an increasingly puzzling conundrum. The law is already several laps behind the reality. Meanwhile, we're waiting for the philosophers who will stake out some moral high ground in a future marked by digits. **M**

Steven Levy is a Macworld columnist and the author of The Unicorn's Secret: Murder in the Age of Aquarius (Prentice-Hall Press, 1988).

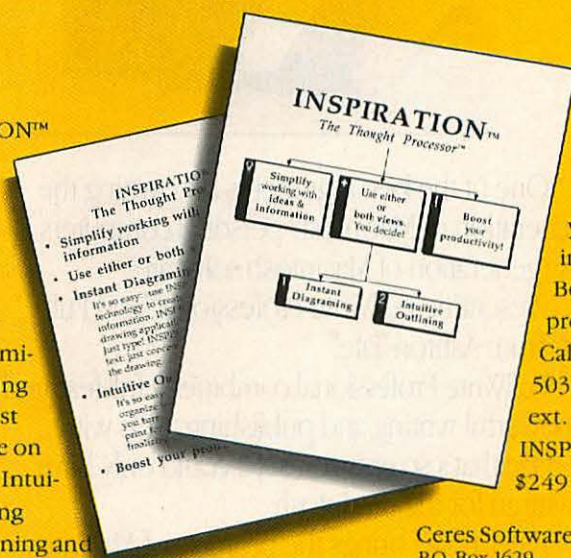
Turn the page to see what's developing between Ashton-Tate and Apple.

Trademarks/owner: Ashton-Tate, Ashton-Tate logo/Ashton-Tate Corporation; Apple/Apple Computer Inc. © 1989 Ashton-Tate Corporation. All rights reserved.

Inspire Productive Thinking! Introducing INSPIRATION,TM The Thought ProcessorTM

INSPIRATIONTM

simplifies working with ideas and information. Instant diagramming eliminates drawing hassles—just concentrate on your ideas. Intuitive outlining makes planning and organizing effortless. Use the form



that best fits the project and your thinking process. Boost your productivity! Call us at 503-245-9011 ext. 250.

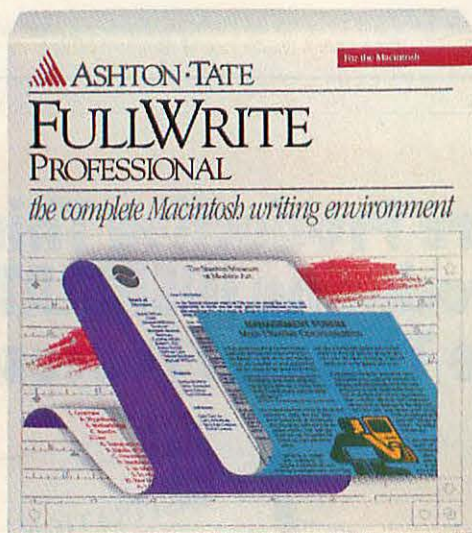
INSPIRATION 2.0
\$249 Demo \$10

Ceres Software, Inc.
P.O. Box 1629
Portland, OR 97207
503-245-9011

INSPIRATION and The Thought Processor are trademarks of Ceres Software, Inc.

Circle 365 on reader service card.

A powerful argument for the Macintosh IICx.

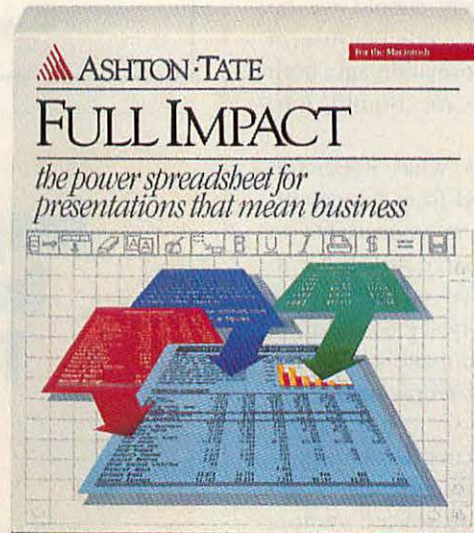


One of the best arguments for owning the new generation of Macintosh® personal computers is the new generation of Macintosh software.

Presenting FullWrite Professional™ and Full Impact™ from Ashton-Tate®.

FullWrite Professional combines a full featured set of powerful writing and publishing tools with an interface that's so easy-to-use, it could only have been written for the Macintosh.

Full Impact brings the promise of Macintosh

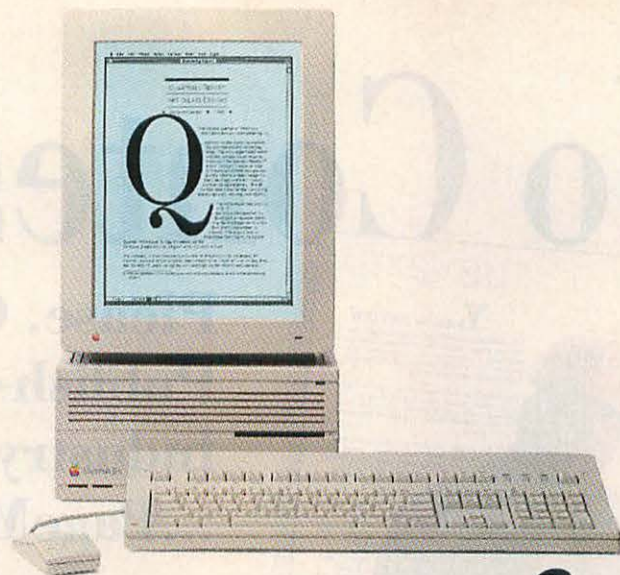


to reality for the users of spreadsheets. Full Impact's accessible power lets you quickly place charts, graphs, text and numbers all on one page. All at one time.

Together, FullWrite Professional and Full Impact let you take full advantage of the full power of the Macintosh IICx. For a free sampler of either FullWrite or Full Impact, call 1-800-437-4329, ext. 2102.*

And who could argue with that?

 **ASHTON-TATE®**
MACINTOSH DIVISION



A powerful argument for FullWrite and Full Impact.

The Macintosh IICX is our newest member of the Macintosh family. It's sleek. It's powerful. And it's exceptionally versatile. But and best of all, it's a Macintosh. Which means you already know how to use it.

But to truly appreciate the Macintosh IICX you have to see it at work. Blazing through spreadsheets. Or creating professional quality documents that look like they came from a publishing house.

And the best way to do just that is to call

1-800-538-9696 for the name of an authorized Apple® reseller who can give you a demonstration of the Macintosh IICX with Ashton-Tate's FullWrite Professional and Full Impact software.

We're sure that one demonstration will resolve any arguments you may have been having about which computer you should have.



The power to be your best.™

It's No Contest!



Please. Compare
Publish<It! to the
Industry Standard
...PageMaker.

"...brings ease-of-use to
Desktop Publishing." InfoWorld

▲ Annual report produced using PUBLISH<IT!
The same...produced with PAGEMAKER.* ►

Take a look. You'll see the difference!
PAGEMAKER cannot rotate text, create fill
patterns and slant margins. You'll need
additional—and expensive—programs.
With PUBLISH<IT!—all you need is
PUBLISH<IT!

Make way for the new standard in DTP software, PUBLISH<IT!—the first *completely self-contained* desktop publishing program for Macintosh computers. PUBLISH<IT!—with 11 DTP "firsts"—combines word processing, page layout, typesetting, graphics, and paste-up in one easy-to-master program.

What Makes PUBLISH<IT! the New Standard in Professional Business Communications?

- It integrates advanced text, page layout, editing, and complete drawing and painting features—all into one program.



- Includes 11 DTP firsts: text and graphics rotation in 1 degree increments; patterned text; integrated bit-map graphics editing; text wrap inside any object; slanted margins; true editable thumbnails; 8 overlap modes; page magnification from 12% to 800%, and much, much more!
- Contains more integrated word processing features—like a 240,000-word thesaurus and 160,000-word spell checker. You can import text from all popular word processors.
- Allows you to edit scanned images after they're placed into your document.
- A Quick-Start Mini-Manual; 70 built-in sample layouts; a unique on-screen help reference system. You'll produce your first document in less than 90 minutes!
- It's designed specifically for the Mac. Written in Assembly language, it's faster across most functions, and requires less than half the disk and memory space of PAGEMAKER.

- And, with all this, you'll spend a few hundred dollars less! PUBLISH<IT!'s suggested retail price is \$395!

Available for Macintosh computers.*

Ask your dealer for a demonstration today, or call Timeworks for more information:

1-312-948-9202. FAX: 312-948-7626

TIMEWORKS
PLATINUM
SERIES

444 Lake Cook Road
Deerfield, Illinois 60015-4919
312-948-9200

*PageMaker version 3.02.
Registered trademarks of their
respective companies.
© 1988 Timeworks, Inc. and
Foton Corp. All rights reserved.

INCLUDES A MONEY BACK
GUARANTEE, TOO!

Circle 418 on reader service card

When It Hurts to Hug

Guidelines for
healthier
computing

by Deborah
Branscum

Rebecca Krieg first knew something was wrong when two fingers on her right hand began to tingle and feel numb. But she thought it was the temporary result of understaffing where she worked. As a copy editor for the *Lexington Herald-Leader*, in Kentucky, Krieg worked 12-hour shifts, pounding away at the keyboard as she edited stories against deadline. By early 1988, "my entire right hand would go numb and turn purple," she says. The first doctor she saw told her to compensate by using her left hand. Soon, it too was throbbing with pain. A second doctor diagnosed the problem as carpal tunnel syndrome and pulled Krieg off the job.

Carpal tunnel syndrome, a painful and potentially crippling ailment, gets its name from a tunnel-like space within the wrist that contains tendons and a nerve that passes impulses from the brain to the hand. Repeated stress or trauma can cause the tendons to swell and press painfully on the nerve. Over time, the nerve can be

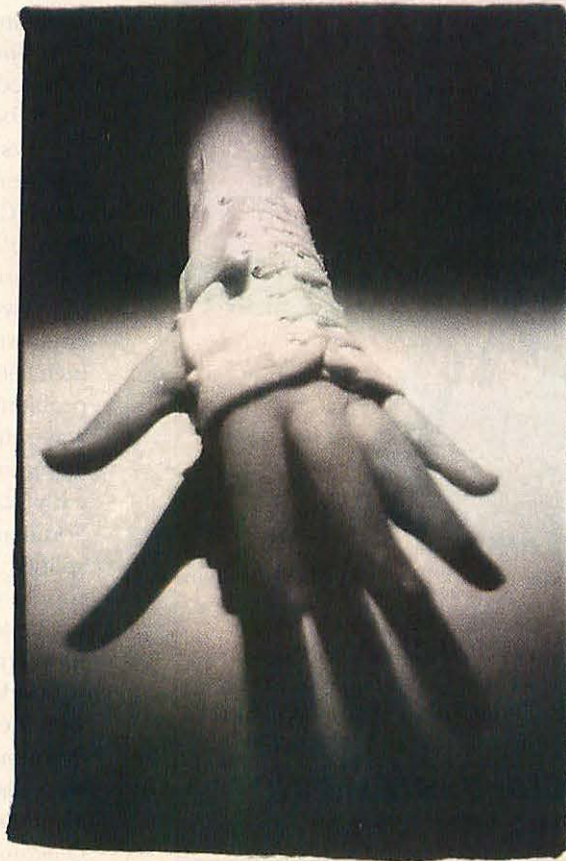
damaged, and victims may lose the ability to grip objects or even to use their hands.

Carpal tunnel syndrome is just one of many musculoskeletal injuries that fall under the rubric of cumulative trauma disorder, also known as repetitive strain injury or repetitive motion disorder. Cumulative trauma disorder encompasses back and upper-body injuries shared by workers across all industries—from auto workers to supermarket cashiers to meat trimmers to office workers. The disorder is popping up wherever people are asked to work like machines—to repeat a particular movement, using small muscle groups, over and over again. Our bodies aren't built for this kind of wear.

Cumulative trauma disorder is "the number one occupational hazard of the nineties," according to California Representative Tom Lantos, who heads the Congressional Employment and Housing Subcommittee. At a hearing held in June, expert witnesses testified that the disorder is on the rise and is expected to make up fully half of work-related injuries over the next decade. Morton Bahr, president of Communications Workers of America, said that 30 to 60 percent of VDT operators surveyed by his union have symptoms of what some have dubbed "the industrial disease for the information age."

"When you walk into a comfortable-looking office, with people sitting in front of VDTs, you don't see a problem," said Lantos. "The danger comes unseen and unnoticed until it's too late."

It's too late for Rebecca Krieg. She was a good copy editor, so highly valued that she was promoted despite her diagnosis. Now she wears braces on her hands. Even after months of physical therapy, "I'm not able to edit," she says. "I don't know what the future holds." Still, Krieg is lucky. Unlike some employers, who fight workers' compensation claims or fire disabled workers, the *Herald-Leader* has given her a new job. But she remains frustrated. "Now I feel like I can't contribute," she (continues)



JEFFERY NEWBURY

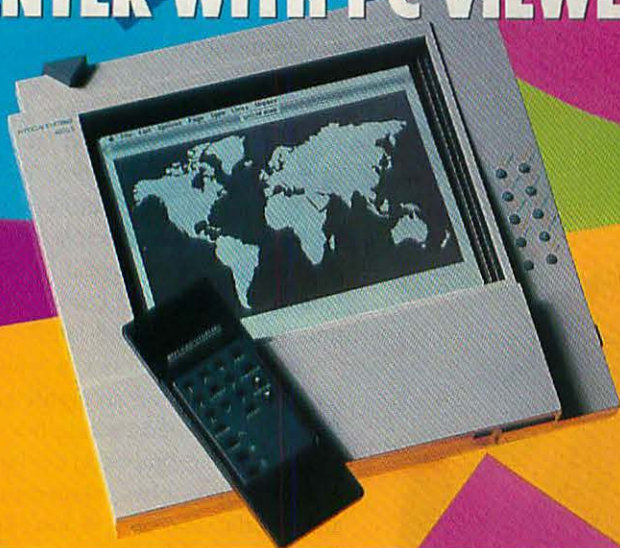
Call us for a free AnthroCart catalog: **800-325-3841**



**Anthro®
Technology Furniture®**
3221 N.W. Yeon St.
Portland, Oregon 97210
(503) 241-7113

Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

EVERYONE GETS FRONT ROW CENTER WITH PC VIEWER.™



Project your Mac® or Mac II® information onto a wall or screen with a PC VIEWER LCD projection panel and an overhead projector. To find out how you can be sure that everyone gets a clear view of your next presentation, call for a free detailed brochure and the dealer nearest you.

In Oregon, (503) 692-4968

PC VIEWER and Memory Module are trademarks of In Focus Systems, Inc.
Mac and Mac II are registered trademarks of Apple Computer, Inc.

IN FOCUS SYSTEMS INC.

1-800-327-7231

Circle 63 on reader service card

says, describing how she still needs help at work for certain tasks. "I have to fight the feeling that I have no value."

According to the Newspaper Guild, more than 200 employees at the *Los Angeles Times* are showing signs of cumulative trauma disorder. "One morning I woke up with an incredible shooting pain between my elbow and shoulder," says one reporter, who asked not to be identified. "I couldn't believe how painful it was. I couldn't even lift my arm." Management at the *Times* has responded to the widespread problem by bringing in adjustable computer tables and new keyboards. There's a video about the ailment for employee viewing, and new chairs with better support are available on request.

"We have a wonderful computer system. But they didn't figure out what the ergonomics were, and we're now paying the price," says the reporter, adding that management should be applauded because the paper is obviously concerned about the problem. But are the company's best efforts enough? "A couple of people I know have problems in the upper arm, some in the wrist, some in the back, and some in the neck. The feeling now at the *L.A. Times* is that we're all going to be crippled; it's just a matter of when."

Rebecca Krieg used an Atex publishing system at the *Herald-Leader*. The reporter at the *Times* works on a system called Coyote. Denise Caruso, a columnist for the *San Francisco Examiner*, uses a Macintosh.

"Two months ago I noticed that I couldn't move my fingers more than an inch in the morning," says Caruso. "I'd had problems with tendinitis before, but this was much worse than anything I'd ever experienced." It was diagnosed as the early stages of carpal tunnel syndrome. Fortunately, it's not too late for Caruso; splints, drugs, and time off from work should undo the damage. But unless she is able to adapt her work to her body, the problem may crop up again.

Barbara Silverstein is an ergonomist with the University of Michigan Center for Ergonomics and School of Public Health; she's also an expert in cumulative trauma disorder. This disorder shouldn't be an
(continues)

You've been practicing
for years.

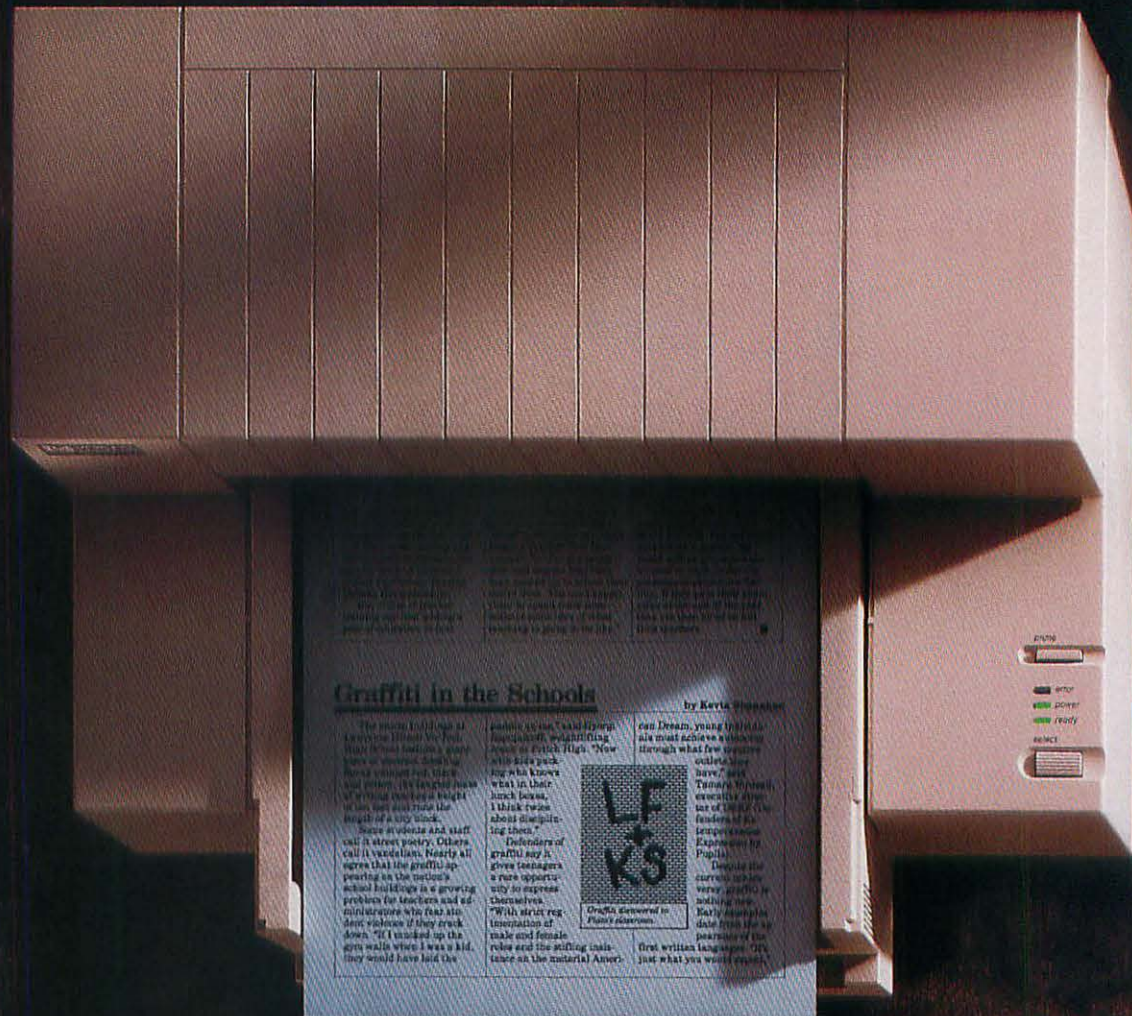


HELP!



KISS
LIKE A
FROG!

Now it's time to play.



Graffiti in the Schools

by Kevin Hennehan

The many traditions of Lanyard Middle School in York, Maine, have been a source of pride for its students and staff. One tradition, however, has been a source of controversy: graffiti.

Some students and staff view it as a form of self-expression. Others see it as a problem for teachers and administrators who fear student violence if they track down the graffiti.

Students at Lanyard Middle School in York, Maine, have been a source of pride for its students and staff. One tradition, however, has been a source of controversy: graffiti.

Some students and staff view it as a form of self-expression. Others see it as a problem for teachers and administrators who fear student violence if they track down the graffiti.

Students at Lanyard Middle School in York, Maine, have been a source of pride for its students and staff. One tradition, however, has been a source of controversy: graffiti.

Some students and staff view it as a form of self-expression. Others see it as a problem for teachers and administrators who fear student violence if they track down the graffiti.

LF
KS

Graffiti covered in
Plaster classrooms.

first written language. Of course, just what you would expect.

*Suggested U.S. list price. ©1989 Hewlett-Packard PE 12021

Introducing the HP DeskWriter printer
for the Macintosh. \$1195.*



RESUME: Linda Fitzsimmons

17 Old Mill Lane
New Canaan, CT 06870
(203) 555-1278



OBJECTIVE:
To work as an interior decorator.

EXPERIENCE:
Principal Secretary, Mammone Industries,
1988-present. Taught employee etiquette
class. Adopted Southwest color scheme
for executive offices. Co-authored
"How to Tell if You're Overdressed from the
Magician's Point of View."
President, Creative Clonel Designs,
1985-87. Developed ancillary storage
stations for homeowners and small
businesses.

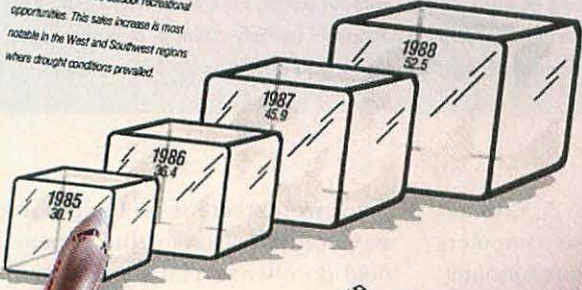
EDUCATION:
B.A. degree in Mass Communications,
University of the Adirondacks, 1984.
Spent the fall semester of prior year
at L'Ecole de Beaux Arts, Lucerne,
Switzerland.

REFERENCES:
Available upon request.



Sales of Ice Cubes (in millions)

In the 1980s, sales of ice cubes nation-
wide increased as the fitness generation
discovered numerous outdoor recreational
opportunities. This sales increase is most
notable in the West and Southwest regions
where drought conditions prevailed.



Frostiman Corp.



Mr. and Mrs. John Fitzsimmons request the
honour of your presence at the marriage of
their daughter
Linda Helene
to
Mr. Kevin Stansbury
on Tuesday, the twenty-third day of
November, nineteen hundred ninety, at the
Church of Our Saviour, Naperville.
Reception to follow.
The favour of a reply is requested.

The new HP DeskWriter printer for the Macintosh puts laser quality on your desktop. With its advanced inkjet technology you can print text and graphics, even scalable outline fonts, at 300 DPI. Just like a laser printer.

But unlike a laser printer, the

DeskWriter is priced so you can have your own. No more waiting in line for output. Or having your work scrutinized by the office busybodies.

And at a compact 15" x 17" x 8", the DeskWriter fits neatly next to your Macintosh. So call 1-800-752-0900, Ext. 688E

for your nearest authorized HP dealer and see a demonstration. And keep the laser quality all to yourself.

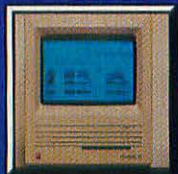
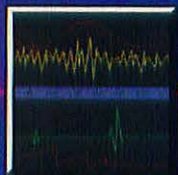
There is a better way.



**HEWLETT
PACKARD**

Circle 343 on reader service card

Link Your Lab to the Mac.



Work faster and smarter with our data acquisition and control hardware/software on any Macintosh. Acquire, store, display and analyze data. Print screens and reports. You'll be amazed at how easy it is to add Macintosh power to your lab.



GW Instruments, Inc.

35 Medford St., Somerville, MA 02143

The Macintosh Data Acquisition Company

FREE 56-PAGE CATALOG 617-625-4096

SERVICE HEROES

I've been using MacRecorder for well over a year now, and lately I've had some problems where I had to carefully plug in the microphone to get it to work," writes Ken Abrams of Chapeau Software Services. Abrams wanted to open the box for a simple solder job to fix the problem. But when he called Farallon Computing's customer service department for directions on opening up the product, the technician said opening the box would void the warranty.

"When I said that I figured the warranty had expired, he said something that truly amazed me: 'Well, yes, our warranty technically only lasts one year, but we consider any MacRecorders that we have sold to be still under warranty.' Rather pleased with Farallon's point of view on the matter, I packaged up the unit and sent it to them at 2 p.m. on Monday. I then

received a completely new unit, documentation, and disks (with updated software) at 1:30 p.m. on Wednesday." Good work, Farallon.

Dove Computer went well beyond the call of duty for Philip Hagopian of Merrimac, Massachusetts. When the old MacSnap 1MB upgrade in Hagopian's Fat Mac failed recently, he shipped the board to Dove. It came back three and a half weeks later, repaired at no cost. Then, while re-installing the MacSnap board, Hagopian snapped a pin leg on a Dove SCSI board in the machine. "In three weeks I received another package from Dove," he writes. "Both the 1-meg upgrade and the SCSI board warranties have long since expired. Yet Dove Computer repaired both boards without asking for 1 cent. Thank you, Kim Johnson [quality control manager] and thank you Dove Computer Corporation."

issue for casual computer users, says Silverstein, but "people who use computers day in and day out need to worry about it. When you use a computer, you tend to be keying the entire time. We think these jobs aren't forceful because we're not lifting things. But it takes four times more force to pinch things than to grip them."

It's unclear why so many office workers are now becoming afflicted with this disorder. The national Occupational Safety and Health Administration (OSHA) has only one ergonomist on staff and virtually no studies of its own to either track or explain the increase among computer users. Some suggest that typing on a typewriter helped prevent carpal tunnel syndrome, for example, because typists had to stop periodically to change paper. Now data-entry clerks are hitting up to 12,000 to 14,000 strokes per hour, with few breaks. And reporters who once went to the library for research and took notes by hand are doing it all via their computer keyboards.

Without in-depth studies of the problem and established standards for com-

puter work, there is no foolproof way to stave off the disorder. But experts in the field do offer several suggestions.

▪ *Take preventive measures.* When Rebecca Krieg was still a copy editor, her coworkers ranged in height from 5 feet 5 inches to more than 6 feet, yet everyone worked at tables and chairs of the same height. Adjustable table height and adjustable chairs with low-back support are ideal for marathon computer users. If you can't adjust table height, an adjustable chair and foot support may at least help.

When you work at the keyboard, type with your arms straight and parallel to the floor, rather than curling your hands down or up, which contributes to carpal tunnel syndrome. Wrist rests can help support your arms and keep them straight. Your display should be able to tilt and swivel. (There are products that let you mount a compact Mac so that it does both.) When using a mouse, keep your elbow no more than 60 degrees above your side. "If you're holding the elbow up for long periods of time, you cut off the circulation to your

(continues)

Circle 124 on reader service card.

ImageWriter® Users Shouldn't Look At This

ADOBE®

*If you still don't know why,
call (800)344-8335 for
some important input on your
ImageWriter output.*



ImageWriter

The Adobe logo is a registered trademark
of Adobe Systems Incorporated.
ImageWriter is a registered trademark
of Apple Computer, Inc. ©1989 Adobe
Systems Incorporated. All rights reserved.



MirrorImage Printer \$2997

The first PostScript® compatible printer for the Mac to break the \$3000 price barrier! Look familiar? It's based around the popular Eddy Award winning Qume design. Loaded with 3MB RAM, 35 built-in fonts, 6 page/minute RISC technology and a 300dpi liquid crystal shutter, it can out perform Apple's best printers. We bundle it with our Mirror Publisher Pack and back it with a 12 month / 90 day ON-SITE warranty. Why would you buy it from anyone else?

"\$1500 less, and they didn't try to sell me a bunch of extra fonts I'll never use!"

—Doug Clapp, Author



**40MB drive—
42MB removable \$1497**

Our new "C" series drives are a mass storage and backup/archiving solution in a single cabinet. Industry leading Quantum and Imprimis drive mechanisms are the heart of these systems that race along at speeds to 16ms! Choose the 42MB removable or 150MB tape for a seamless backup/archiving solution. C40/42: \$1497. C80/42: \$1897. C100/42: \$1997. C170/42: \$2597. C170/150: \$2597. C290/150: \$3397. C580/150: \$3997.



150MB tape backup \$1097

The DC600 technology used in our new T150 tape drive can perform backups at 3 times the speed and with 3-1/2 times the capacity of the Apple tape solution—all at a lower price! Our custom backup software allows for automated (unattended) backups, mirror image, file-by-file, incremental or custom backups.

The Right Products

Since 1985 our mission has been to deliver high performance solutions at the very best prices. It all began with the ancestor of this little workhorse, the RM.8, an 800k floppy that reviewers have loved for years. We've continued to improve it and have dropped the price to \$147! From that beginning, we've grown to offer four removable technologies, making us the only company that can objectively recommend the right removable for your needs.



There's no excuse for leaving your valuable data unprotected. Our new T150 tape backup combines proven DC600 technology, our easy-to-use software, and an "excuse shattering" low price.

We've joined forces with our Minneapolis neighbor, Imprimis, to introduce three new drives with capacities to 580MB. We chose Imprimis drive for rock solid performance and blistering speeds to 16ms.

We were first to introduce a combination storage/backup solution in 1986. Our new generation "C" series is comprised of seven solutions based around Quantum and Imprimis drives (the slowest being 19ms!) with a choice of 42MB removable or 150MB tape for reliable backup and archiving.

Our new MirrorImage printer breaks the \$3000 price barrier for PostScript® compatible Macintosh printers!

The Right Prices

"Mirror Technologies has proven again that high performance doesn't have to be priced higher than a kite... Factory direct sales keep the price low."
—MacGuide

Thank you MacGuide! We couldn't have said it better ourselves. We've shown thousands of Macintosh users a better way to buy computer products. When you buy direct from Mirror Technologies, you get Factory Direct pricing, our 30 day **Love-It-or-Return-It** guarantee, solid warranties and answers direct from the source. (After all, for product

information, who better to ask than its maker?)

And our momentum lets us continue to drive prices down!

Right Now!

We've doubled our sales staff, established a 24 hour / 7 days a week order hotline, and offer Federal Express delivery—all to make sure you never wait. So don't—order right now by calling

1-800-654-5294.





20MB external

\$447

"The cream of the crop... and are also among the least expensive."—*MacWorld*
Sleek, fast, quiet. Our M series hard drives feature an international power supply, external SCSI switching, cables, and whisper quiet fan. Drives ship formatted, tested and loaded with 10MB of utilities and shareware, and are backed with our 2 year limited warranty. Our three newest drives feature high capacities (170,290, 580MB) and speeds to 16ms! M20: \$447, M30: \$497, MP40: \$647, M45: \$597, M60: \$667, M80: \$727, MP80: \$997, MP100: \$1097, M170: \$1897, M290: \$2497, M580: \$3297. (MP designates premium 19ms Quantum drives.)



20MB internal

\$377

Our internal drives save you space and money. We've got internal solutions for the Mac SE, SE30, II, and IIfx. SE owners—keep both floppy drives (or one floppy and one hard drive) with our unique mounting system. Drives ship formatted, tested and loaded with 10MB of utilities and shareware, and are backed with our 2 year limited warranty. M20i: \$377, M30i: \$427, MP40i: \$577, M45i: \$527, MP80i: \$927, MP100i: \$1027. (MP designates premium 19ms Quantum drives.)



Flatbed Scanner

\$597

Our VS300 and 200 scanners deliver crisp text, line art, and dithered halftones at a fraction of the cost of most scanners. The clean, elegant design means a compact footprint, fewer moving parts, 3-D capabilities, and no bulbs to replace. The simple to use software saves in all popular formats and operates as a Desk Accessory. We even include DeskPaint for retouching!
"If it were my money, I'd buy the Mirror... its price/performance ratio is unequalled"—*Byte*
AND, for a limited time, we'll also include FREE Optical Character Recognition (OCR) software from Olduvai (\$495 Value). VS200 (200dpi): \$597, VS300 (300dpi): \$797.



20MB removable

\$877

The RM20 operates as fast as many hard drives but with the integrity of a floppy. Utilizing disks and technology from Kodak, the shock resistant media is guaranteed for life, making it perfect for archiving and backups.
"...faster [and \$100 less] than the Jasmine drive"—*MacUser*.



42MB removable

\$897

Built around Eddy award winning Syquest technology, the RM42 is faster than most hard drives.



"The 45MB removables [42MB formatted] were among the fastest backup solutions I tested."

—*MacWorld*

"For convenience, flexibility and speed, the 45MB removable is the clear winner."

—*MacWorld*

Auto head parking, self diagnosis, and a memory cache that allows

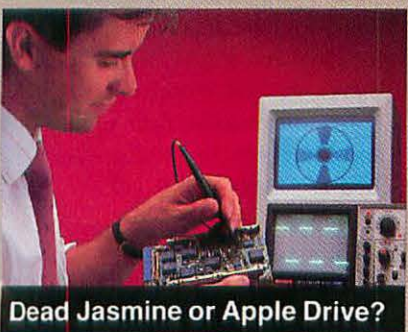
optimum 1:1 interleaving on all Macs, make the RM42 the right choice. 42MB/42MB (Combo) \$1697.



30MB removable

\$747

Imagine securing your drive or file server each night by just turning a key and sliding out a hard drive module. Our RD series are removable modules containing our best sealed hard drives, with capacities to 100MB and speeds as fast as 19ms. The obvious choice for high security applications. RD30: \$747, RDP40: \$897, RDP80: \$1247, RDP100: \$1347. (Prices include RC chassis. RDP designates premium 19ms Quantum drives.)



Dead Jasmine or Apple Drive?

Our experts fix their drives too. And we usually do it cheaper and faster! Give that expired drive a second life. 20MB: \$237, 30MB: \$247, 40MB: \$277 (SCSI embedded and internals slightly higher). Call our Technical Support Hotline for details: 612-633-2105.

MIRROR
TECHNOLOGIES

2644 Patton Road
Roseville, MN 55113
(612) 633-4450
fax: (612) 633-3136

Technical Support Hotline:
(612) 633-2105
Hours: Mon-Fri
8am-5pm CST



Order Toll Free
1-800-654-5294

Trademarks of Mirror Technologies, Inc. All other brand and product names are trademarks or registered trade names of their respective holders.

Circle 424 on reader service card

Why Sensible Grammar™ is first in its class.

Now anything you write, from a business letter to an annual report, can be stronger and clearer. With *Sensible Grammar*.™ A professional proof-reading program that uses artificial intelligence to check your punctuation, usage, phraseology and more.

Sensible Grammar scans your work for potential errors and automatically displays the sentences in which they appear. It explains what's wrong and even suggests corrections. Making changes is easy—a simple click of the mouse, and you can do anything from inserting proper punctuation to rewriting entire sentences using the built-in sentence editor. And your formatting information remains unaffected.

Sensible Grammar compares your text against a library of over 4500 phrases to identify informal, vague, racist, sexist and other faulty language. It catches embarrassing typographical errors like misused capitalization and repeated words, and alerts you to mismatched verbs and pronouns, needlessly long sentences and more. It even provides a readability analysis.

Sensible Grammar works with WordPerfect, Microsoft Word, Works, and Write, Apple/Claris MacWrite, T/Maker WriteNow and text files. And it costs just \$99.95.

So get *Sensible Grammar*. And be the most effective communicator you can be.

Also available: Bookends™, the reference management database and bibliography preparation system (\$99.95).



Sensible Software, Inc.
335 East Big Beaver, Suite 207
Troy, MI 48063
(313) 528-1950

SEPTEMBER APPLE WARRANTY WATCH



70 Months
of Inadequate Warranty

rotator cuff tendons," says Silverstein.

Silverstein would like to see breaks designed into work schedules, since she believes that people simply don't take breaks otherwise. Although I can't imagine the practice catching on quickly, she suggests that randomly shutting down computers for a minute and a half might be one solution. She also suggests organizing jobs so that people must get up periodically and do something that doesn't require keying. In the meantime, take frequent ten-minute breaks from your keyboard to file or return phone calls.

▪ *Don't ignore symptoms.* Pay attention to your body. Seek medical treatment if your hand hurts or your shoulder aches. Carpal tunnel syndrome's most common symptoms include numbness, tingling, and burning sensations in the fingers and hand. Other problems may occur in the shoulder, neck, arm, and back.

"Go to a doctor as soon as possible," says Silverstein. "The longer you wait, the less chance there is that conservative treatment will work." Unfortunately, it's possible that your health care worker may not recognize the disorder. Carpal tunnel syndrome is often misdiagnosed as arthritis, according to the Safety and Health Program of the United Food and Commercial Workers Union. But unlike arthritis, carpal tunnel syndrome affects the thumb and first three fingers, not the entire hand. Still, word is getting out and physicians are becoming educated about these injuries.

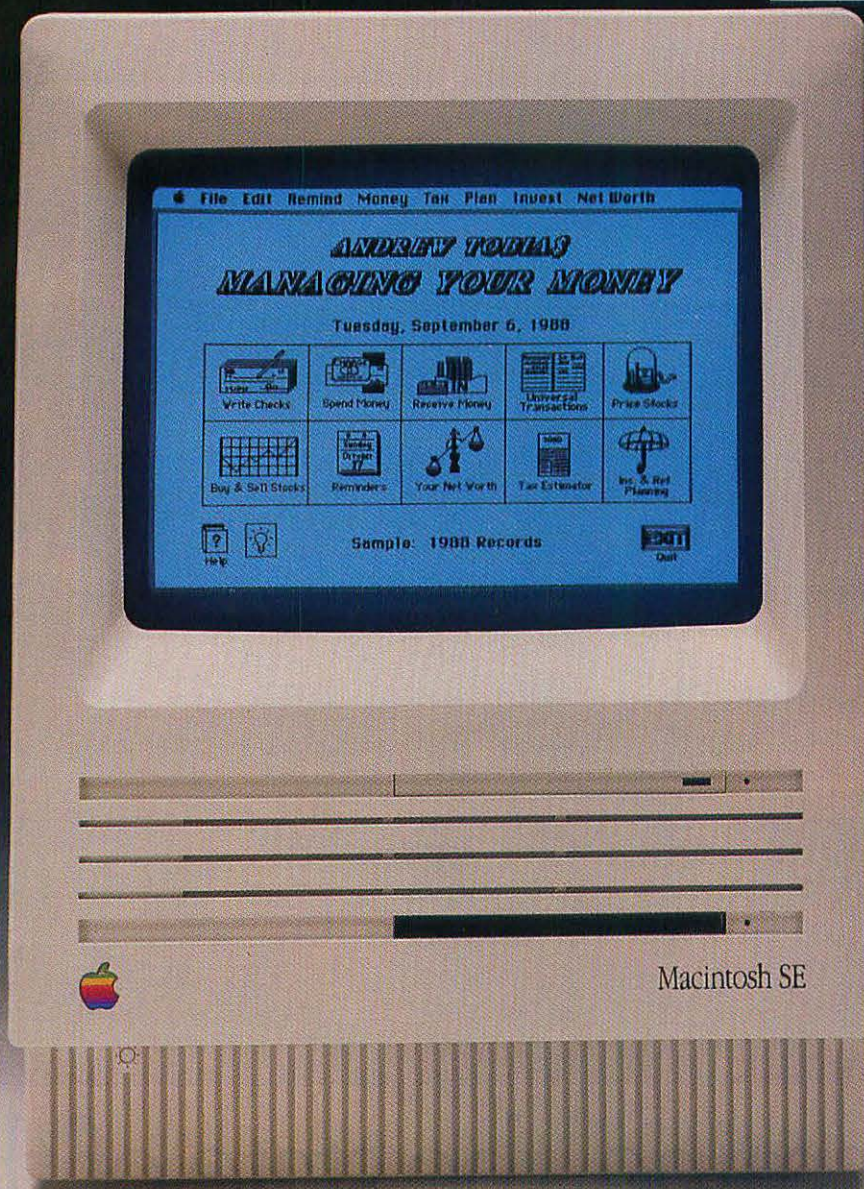
▪ *Urge Congress to take action.* Barbara Silverstein is pushing for an OSHA panel of experts to study cumulative trauma disorder. She wants OSHA to establish a standard for job design and ergonomics that employees and companies can use to combat this disorder. But one ergonomist at OSHA can't do the job alone. Ask your legislators to support resources for an OSHA study and job-design guidelines. In the absence of real information, some companies are feeding workers vitamin B₆ or implementing five-minute exercise periods because they are desperate to do something, but these measures haven't solved or prevented the problem.

Krieg lives alone. She needs help to clean her house, buy groceries, make dinner. She can't even hold a coffee cup with one hand. Other victims say they can't comb their hair or pick up their children. "It affects every part of your life," said Krieg when she testified in June before the Congressional Employment and Housing Subcommittee. "I can't even hug someone without pain."

For more information about ergonomics and computer use, read *The VDT Book: A Computer User's Guide to Health and Safety*. This great 48-page booklet covers health issues associated with VDT use and offers solutions to common problems. It's yours for \$6 (includes postage and handling) from the New York Committee for Occupational Safety and Health, 275 Seventh Ave., 25th Fl., New York, NY 10001. *The Electronic Sweatshop* is a lively \$4 read about VDT work and the electronics industry and includes a resource list. Order it from the Center for Investigative Reporting (415/543-1200). For a more technical approach, *Improving VDT Work* and *VDT Health and Safety* are available from Ergosyst for \$15 and \$32, respectively. Ergosyst can be reached at 913/842-7348. ■

.....
I love happy endings. Individual readers (not vendors) should send nominees for sainthood to Service Heroes, *Macworld*, 501 Second St., San Francisco, CA 94107 or via AppleLink (Macworld1) or Connect (Branscum). Conversely, drop me a line if a company is ignoring you. I will try to help. If your user group is sponsoring an event, please get in touch. Attention Mac-only dealers: I'm compiling a list, so let me know that you're out there.

MANAGING YOUR MONEY... NO OTHER PROGRAM DOES MORE FOR YOUR MONEY.



Managing Your Money[®] is the most comprehensive, easy to use money management program available on the Macintosh[™]! Fully integrated and updated for the new tax laws, MYM Mac is everything you'll ever need to master your personal or small business finances:

- CHECK WRITING AND BUDGETING
- TAX PLANNING
- INSURANCE PLANNING
- FINANCIAL PLANNING
- PORTFOLIO MANAGER
- NET WORTH

And there's more:

- POWERFUL SMALL BUSINESS FEATURES
- EXTENSIVE GRAPHICS & REPORTING
- EXPORTS TO EXCEL[®] AND MACINTAX[®]
- NOT COPY PROTECTED

Let Andrew Tobias become your financial advisor and find out why year after year, Managing Your Money is rated the outstanding program in its class.

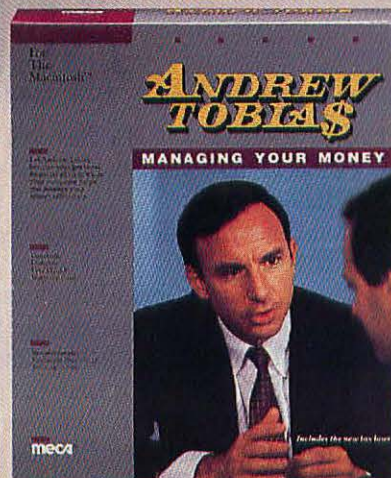
**"...Managing Your Money
is the Mercedes of
personal finance programs."**

— Macweek, 9/13/88

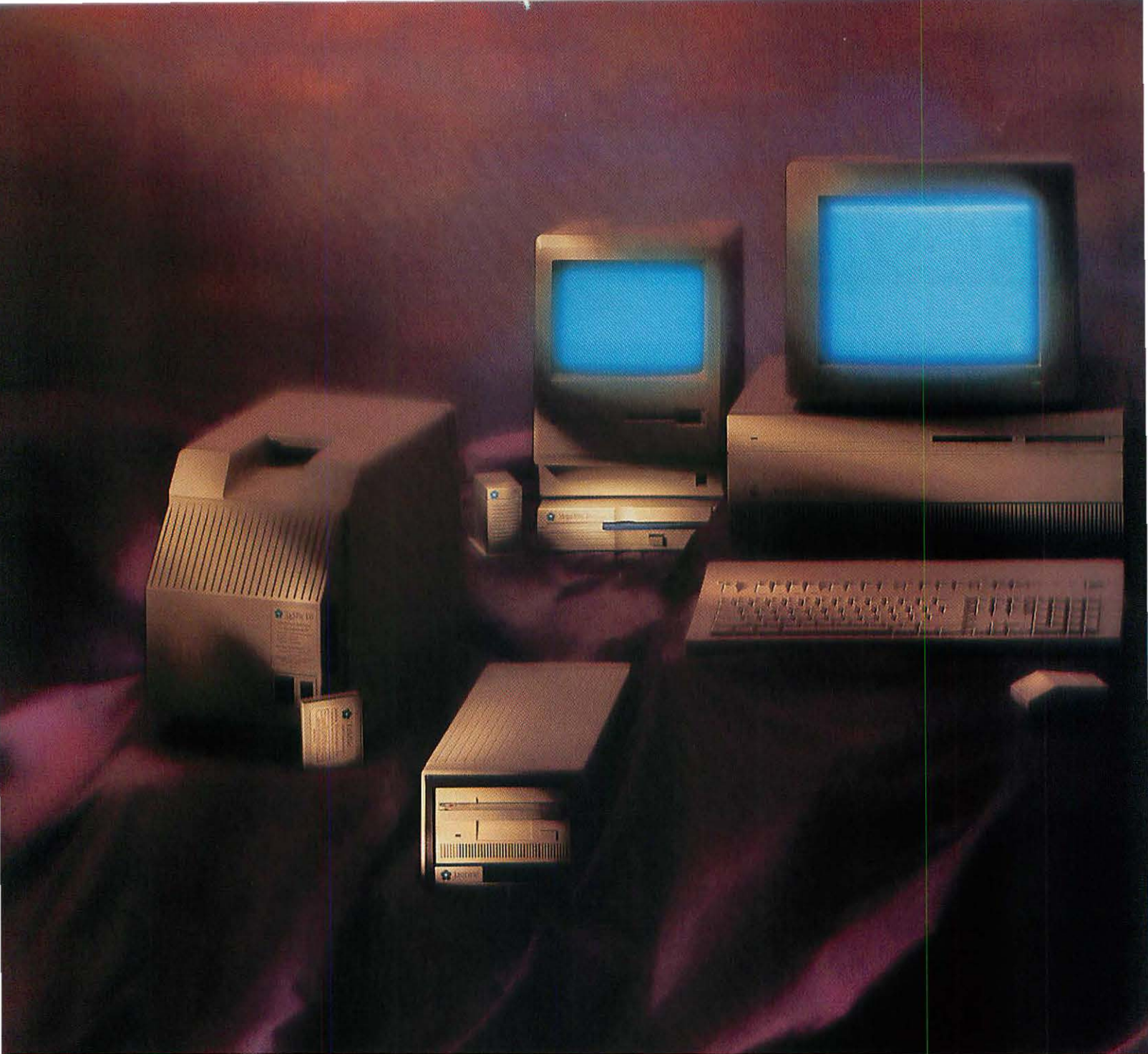
meca[®]

Software that makes your personal computer worth having.

© 1988 • MECA • 355 Riverside Avenue • Westport, CT 06880
For Macintosh Plus, SE, II, 512KE. Two disk drives (one being at least 800K).



Circle 37 on reader service card



At Jasmine, the state of the

■ Put the revolutionary BackPac on your Mac Plus or SE, and gain extra power and storage without losing portability. 20MB: \$649. 40MB: \$799. 80MB: \$1099. 100MB: \$1299.

■ The TalkBac 2400 Baud internal modem is Hayes AT-compatible, fits right into the back of the BackPac. \$199.

■ For reliable mass storage, the DirectOptical Drive features a removable, erasable cartridge with 300MB of storage on each side. \$4995.

■ Only 12 ounces and about the size of a mouse, the stand-alone TalkBac 2400 Baud modem gives you greater performance per pound. \$269.

■ For the capacity of a hard drive plus the convenience of a floppy drive, the MegaDrive removable media system lets you store 10 or 20MB

of data on a single, removable MegaFloppy disk. Awarded the 1988 World Class Award by Macworld. (20MB model shown at right.) 10MB: \$699. 20MB: \$999.

■ We can't show you the InnerDrive, since it's already installed inside this Mac II. And since it's incredibly quiet and 33% cooler than most other drives, chances are you won't notice it even when it's running. (Also available for the SE.) 40/SE: \$649, 40/II: \$649. 80/SE: \$949, 80/II: \$949. 100/SE: \$1099, 100/II: \$1099. 140/II: \$1499. (Mac II only.)

■ The DirectDrive XL free standing mass storage sub-system offers 1.4 gigabyte capacity and optional tape backup. Custom configurable and powerful enough for dozens of applications from CAD to LAN to desktop



art is always a state of mind.

publishing. *(Call for pricing.)*

■ With the DirectServe dedicated file server running your network, you'll be able to share peripherals and send and receive files more economically than ever before. *(Call for pricing.)*

■ The DirectDrive Series gives you more than more megabytes for your money. They're thoroughly tested, incredibly fast, and come with 10MB of disk utilities and shareware. 20MB: \$549. 40MB: \$699. 80MB: \$999. 100MB: \$1199. 140MB: \$1499. 300MB: \$2795.

■ With the amazing DirectTape backup system, backing up data is as easy as it is fast. Provides 40MB of storage for a single user, or an entire network. \$899.



■ The DirectPrint 300-dpi printer is PostScript page description language-compatible and uses liquid crystal shutter technology for a superior printed image. 1989 Eddy Award winner. \$3495.

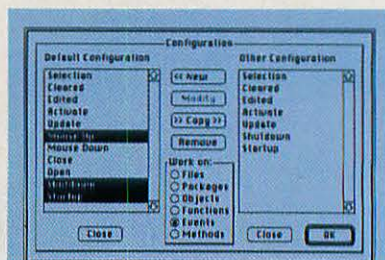
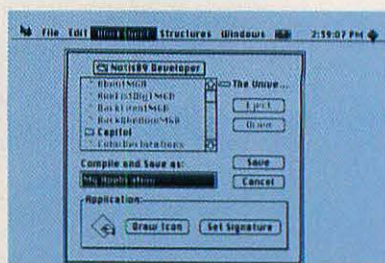
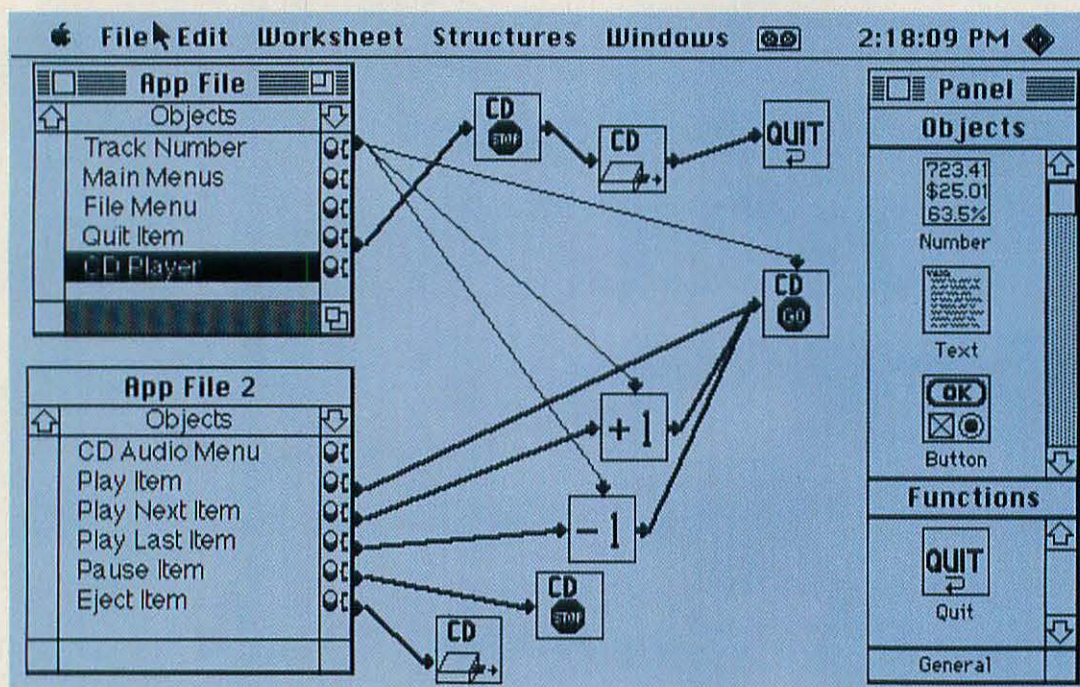


Jasmine

1-800-347-3228

Circle 102 on reader service card

Introducing Desktop Programming From **Serius**.



Serius 89 eliminates almost entirely the task of building a graphic user interface. For the first time, you don't have to begin building every new application from scratch.

Let's face it. Developing programs on a Macintosh® is not an easy, every-day task.

If only there were a way to quickly and easily create a custom application. Without having to learn complicated programming languages like C or Pascal.

Now there is.

It's called Serius 89™. An amazing new software package that gives Macintosh users the power to create their own custom applications. On the top of their desk and with the touch of a finger.

Now you can save countless hours of development cost with Serius 89 because you can develop your own applications without the need to hire a systems analyst.

With Serius 89, you simply "draw" applications using drag and click actions on a mouse.

Serius 89 is very much like your favorite desktop publishing program. It presents a pallet of programming components easy to identify, easy to use and Hyper-Card® compatible. As fast as you can select icons and

link them together on the screen, Serius 89 Object Interaction Protocol™ connects the chains of functions and converts them into a bug-free application.

When the programming is completed, you can compile and save it as a stand-alone application. Even the icon that the Finder displays can be custom designed. The new program can be immediately used by anyone—not just the programmer, because it operates transparently with familiar Macintosh techniques.

So, whether you are an experienced Macintosh programmer or not, you now have the power to program even the toughest applications right on your desktop! For more information, call us at 1-800-876-6847, or 1-801-977-9077.

Serius™

**Notis89 is now Serius.
Programming For The Rest Of Us**

2607 S. Decker Lake Blvd., Salt Lake City, Utah 84119

Circle 423 on reader service card

Serius 89 works with all Macintosh computers from the Plus to the Macintosh II, including the SE 30 and the new cx. Serius, the Serius logo, Serius 89 and Object Interaction Protocol are trademarks of Serius Corporation. All other product names mentioned are trademarks or registered trademarks of their respective holders © 1989 Serius Corporation.

As predicted, this has been a year of change in the Macintosh world. We've received new Mac models, new options, and the first hints of a new operating system. Apple, of course, hopes that these new goodies will get you to rush down to your local computer shoppe and charge up a storm.

But most of you reading this magazine already have Macintoshes. Indeed, many of you stretched your budget to get your current machine—there is just no way you're going to abandon it and buy a new one at list price. Or is there? With System 7.0 and all its mouth-watering goodies just around the corner, you need to start choosing one of three options: stay put, upgrade, or start over. This month I'll make my suggestions to those of you who have a Mac 128K, 512K, 512KE, Plus, or SE (the classic, compact Macs). Next month I'll advise Mac II owners.

The major impetus behind the need to update your equipment comes from Apple's System 7.0 plans, which were previewed to the press and developers in May. System 7.0 appears to stretch the Macintosh into a much more capable

machine, but at the expense of memory and processor power. You'll need a minimum of 2MB of RAM to run the new System, and many of its more desirable features—virtual memory support for MultiFinder, interapplication communications, 32-bit color support, more accurate on-screen text

positioning, and scalable outline fonts, for instance—will place additional demands on your system, particularly on the processor. Running System 7.0 on a 2MB Mac Plus with a 20MB hard disk will work, but you'll be forgoing some of the new software's better features (virtual memory won't work without a 68030 or a 68020/68551-combination processor, for ex-

ample). In fact, you might find that your Mac Plus acts even more sluggish than it does today if you try to make System 7.0 do too much on too little a machine.

Don't underestimate how much change System 7.0 will produce (or how long it will take to get here). In my talks with developers, I've found that they all want to be ready to take advantage of many of the new features the minute they're available (best guess: March 1990). System 7.0 has already caused developers to rethink portions of the user interface (quick, how do you specify 21-point type?). As developers learn more, I'm sure they'll find other things to change in their programs, as well.

My initial evaluation of what Apple has said about System 7.0 leads me to several conclusions about the minimum Macintosh machine needed to run it effectively: 4MB of RAM, an 80MB hard disk, and a 16MHz 68030 processor. Sounds a lot like a Mac IIX, doesn't it? Yup, and that's the challenge facing owners of the older compact Macs, so without further ado, let's deal with them model by model.

DEALING WITH MATURE MACS

Those of you who, like me, have been with the Mac since the beginning have already been through one pretty dramatic change: the switch to HFS (Hierarchical File System) and the Mac Plus ROM set (128K ROM chips). When Apple introduced the Plus back in 1986, the changes in the hardware and operating system were substantial enough to warrant making a big investment in upgrading our machines. I remember paying a little over \$1000 for my 128K-to-Plus upgrade. For that, I got the HFS file format and new system software, a keyboard with arrow and other additional keys, a ROM change, twice the floppy storage capacity (from the original 400K to the current 800K drives), a SCSI hard disk port, and 512K of additional memory (I had already added memory to my original Mac).

It was a good thing I made the change, too. Many software developers stopped supporting the old 128K Mac within a matter of months. If you're one of the few folks out there who still have an original

(continues)

Macs, They Are A-Changin'

Should you stay put,
upgrade, or start over?

by Thom Hogan



Anything Can Happen After Dark™

The Versatile Screen Saver

Choose from ten exciting screen saver modules including flashing lightning bolts, breaking meteors, crawling worms, and a jump to light speed.

To project a sophisticated image, display your company logo as a screen saver, or dim your screen when not in use.

For programmers. After Dark comes with complete technical instructions for building your own screen saving creations.

Your screen won't burn out, why should you? For the Macintosh 512KE or better. Retail price \$39.95

BERKELEY SYSTEMS

700 Shattuck Ave., Berkeley, CA 94709
1514-540-5535

Dealers circle 381 on reader service card
and Users circle 187 on reader service card

STATE OF THE MAC

128K or 512K Mac, I salute you—you're a pioneer. I sure hope that you enjoy what you've got, since virtually every new (nongame) software product I've seen in the last year won't run on your machine. And this trend will simply get worse. For the time being, Apple still offers extended care for these older machines, but that won't last forever. When Apple runs out of inventory of old 400K drives and logic boards, you can expect it to bow out of the support picture for 128Ks and 512Ks, just as the company did with the original Apple IIs. It's hard to predict when this might happen—it could be tomorrow, it could be several years away.

It's still possible to find authorized dealers who remember the 128K-to-Plus upgrade and will still do the work for you. The only problem is that the street price of the Plus has dropped to about \$1250 (at least here in the San Francisco Bay Area), which isn't much more than the upgrade. Thus, my suggestion to you 128K and 512K owners is to bite the big one, reach deep into your wallet (or credit limit), and buy—at the least—a new Plus. Believe me, the difference in using the original MacWrite on a 128K Mac with floppies and using MacWrite II on a Plus with even a small, slow hard disk is phenomenal. If you value your time and sanity, upgrade now.

What about third-party upgrades for the original Macs? It's still possible to find MegaMax and other 1MB memory upgrades for the 128K. But I see several problems with bolting additional memory onto a 128K or 512K Mac. First, the power supply in those machines is highly suspect, and not likely to like the additional load the added memory or options will make (and yes, Apple *has* improved the Plus's power supply lately to make it much more reliable). Second, virtually all of the companies producing such options are small, and the failure rate among them has

been high—thus, you may find that support for your upgrade disappears sometime in the near future. And third, you're still stuck with the original ROM chips, which means that most software being introduced today won't work on your machine regardless of how much memory it's got.

Conclusion for Mac 128K and 512K owners: Live with what you've got or buy a new machine.

THE PLUS'S PLUSES

If you've got a Mac Plus, you're in better shape. A Plus can easily be upgraded to 2MB or 4MB of RAM, and a wealth of third-party support exists for other memory options. Dove, for instance, has several add-on memory products that work well, don't force you to throw away your current SIMMs, and are easy to install.

Better still, several companies make very good accelerator boards for the Plus. My favorite has been the basic Radius accelerator (no coprocessor), which does a good job of speeding up most basic tasks, like word processing and databases. What Plus owners really need, however, is a 68030-based accelerator. As I write this, Dove and Microtech have announced such boards for the SE—I'm sure we'll see some announcements of similar products for the Plus soon. Take a close look at these add-ons—despite their high price—because they'll bring you megabytes of virtual memory with System 7.0. On the other hand, don't rush out and buy a 68030 accelerator today—wait until you can verify that it does indeed work with System 7.0.

It's also pretty easy to find full-page monochrome monitors for the Plus. What you won't find are color monitor options, DOS coprocessors, internal modems, and the like. No big loss there, at least for the majority of us. Color is not much use unless you're into multimedia or sophisticated graphics production; you can buy a cheap IBM PC clone and MacLink Plus if you want to use DOS files on your Mac; and external modems are cheap and plentiful. Besides, System 7.0 really doesn't provide much additional support for any of these options—the real advantages of System 7.0 lie elsewhere.

(continues)



The first affordable 800x400 PostScript® laser printer.

Until now, you had a choice: compromise your graphic standards with a 300 x 300 laser, or compromise your finances with a higher resolution printer.

Now there's the NewGen TurboPS/400 with a standard printing resolution of 400 x 400 dpi. That's almost *twice* the resolution of standard 300 dpi printers — at about the same price.

If you need even higher resolution, you can upgrade to 800 x 400 dpi with our resolution upgrade kit. You'll get the resolution you need to print fine-lined graphics and smooth fonts, and save time and money by printing your own masters. And best of all, you can get 800 x 400 resolution at about half the cost of high-priced imagesetters.

No wonder our competition is fading. **It's faster, too.**

NewGen's dual-processor controller design, utilizing a 20MHz graphics RISC



800 x 400



300 x 300

processor, gives us the fastest PostScript-compatible desktop laser you can buy. In fact, it will print most pages three to five times faster than the Apple LaserWriter® IINTX and blow the doors off anything else in its class.

IBM® and Macintosh® compatibility.

The TurboPS/300 gives you plug and play Macintosh compatibility — with LaserWriter IINTX compatibility, AppleTalk® interface, Adobe® downloadable font

support and 35 Mac screen/printer fonts.

IBM compatibility includes HP LaserJet II®, HPGL and Epson® emulations, and parallel/serial interfaces.

Free test results.

To get the full story on the high-resolution, high-speed TurboPS/400, call NewGen at (714) 641-8900. We'll send you a package including timing test results, print samples and the lowdown on our other remarkable laser, the TurboPS/300.

We'll also send the name of a NewGen reseller in your area. So you can see for yourself. And believe.



NewGen Systems Corporation™

17580 Newhope Street
Fountain Valley, CA 92708
Telephone (714) 641-8900

NewGen, NewGen Systems Corporation, NewGen logo, TurboPS/300 and TurboPS/400 are trademarks of NewGen Systems Corporation. All other brand product names are trademarks or registered trademarks of their respective companies.

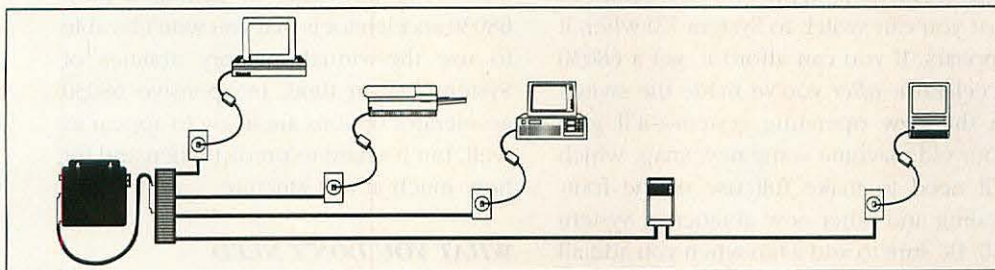
Adobe and PostScript are registered trademarks of Adobe Systems, Inc. NewGen's compatible interpreter is compatible with Adobe PostScript.

Circle 409 on reader service card

Network nitty- gritty.



If you depend on Apple, 3Com, Novell, or TOPS for your networks, then count on the PhoneNET System to keep them working.



Let's get down to basics. The meat and potatoes. The nitty-gritty.

No matter whose network services you buy, if they're not wired right, they'll never work right.

The PhoneNET System is a network wiring system that makes networks work in the first place. A combination of hardware components and network management software that runs your network over ordinary twisted-pair telephone wire.

It doesn't matter whose equipment you use, either. The PhoneNET System works with IBM PCs and Macintoshes, as well as, NeXT, Sun and DEC computers.

And PhoneNET is the only fully-integrated line of products to build and manage everything from small networks to large internets.

In fact, with more than 750,000 units installed, the PhoneNET System is the industry standard for wiring networks together over telephone wire.

PhoneNET family planning.

The PhoneNET System is modular. You can start with a small, one-room network and easily expand to multiple floors or several buildings.

Here are the nuts and bolts of the most reliable network hardware you can buy.

The PhoneNET Connector connects each device to the network, whether it's a small network or a branch of a larger one.

The PhoneNET StarController is a central "hub" that repeats network signals and sends them over multiple branches. It comes with StarCommand software to view network load and test wiring.

And for long distances, the PhoneNET Repeater is the reliable way to run network wiring over several miles.

Now for the software.

Farallon's network management tools include StarCommand, TrafficWatch, and CheckNET. Together, they help you monitor the health of the network, troubleshoot, analyze traffic, and generally help optimize the performance of your network.

LocalTalk or Ethernet? You can have both.

You no longer have to sacrifice economy for speed.

Sure, the PhoneNET System provides an affordable way to run LocalTalk. But sooner or later, you may want to add more speed

to certain parts of the network.

No problem.

Farallon's new products support industry-standard 10 Mb Ethernet over telephone wire, so you can increase the speed of those sections of the network which require more performance.

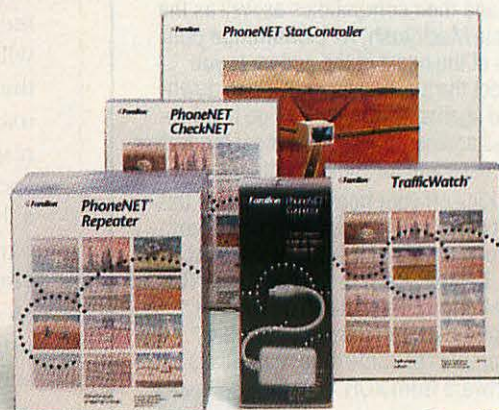
And if you're wondering how we'll fit into your long-range plans, you'll be glad to know the PhoneNET System was designed right from the start to work with ISDN.

All of which makes investing in the PhoneNET System now such a smart move for today and tomorrow.

We do the nitty-gritty.

The bottom line is, networks can be just an expensive pain in the neck if they're not wired right. So, if you're thinking about installing a new network or expanding the one you have, give us a call. Because nobody knows the network nitty-gritty like we do.

For the Farallon dealer nearest you, call (415) 849-2331.



Look for the PhoneNET System logo when you buy network hardware and software products. It is your best assurance of quality and reliability.

PhoneNET

System

 **Farallon**™
2201 Dwight Way, Berkeley, CA 94704

PhoneNET is a registered trademark, and PhoneNET StarController, PhoneNET Repeater, PhoneNET CheckNET, and TrafficWatch are trademarks of Farallon Computing, Inc. Other brands are trademarks of their respective holders. © 1989 Farallon Computing

Circle 150 on reader service card



Put the NFL at your fingertips.

Hands-on pro football excitement is as close as your keyboard with **NFL Challenge** from XOR. This exciting, action-packed computer game gives you updatable rosters of all 28 NFL teams, offensive and defensive playbooks, and true-to-life realism with penalties, injuries, substitutions, and more!

Operating on the IBM PC, PC-XT, PC-AT, and their compatibles as well as the Apple Macintosh, **NFL Challenge** puts you at the heart of the action as you select the starting lineups, drive downfield against the clock, and go head-to-head against the league's most innovative offenses and formidable defenses.

Kick off your home season with this software classic now at your local computer store. Or call **1-800-NFL-CHAL** TOLL FREE. Be sure to check out **PRO Challenge™**, **Basketball Challenge™**, **Oligopoly™**, and **Bermuda Square™** examples of some other First Class Software from XOR.



XOR™
CORPORATION

7607 Bush Lake Road
Minneapolis, Minnesota 55435
(612)-831-0444

Conclusion for Plus owners: You should upgrade to at least 2MB (preferably 4MB) of memory in the very near future so that you can switch to System 7.0 when it appears. If you can afford it, get a 68030 accelerator *after* you've made the switch to the new operating system—it'll give your old machine some new snap, which it'll need to make full use of the font-scaling and other new abilities in System 7.0. Be sure to add a fan when you add all this new hardware to your Plus. My favorite is the diminutive (and quiet) Fanny Mac, available from Mobius Technologies (415/654-0556).

SE OWNERS HAVE MORE CHOICES

Mac SE owners have all the same options Plus owners do, plus a few more. If you've got the bucks (expected to be about \$2500 as I write this), your best bet is to accept Apple's offer to upgrade your SE into an SE/30. It's clear that the 68030 is Apple's choice of processor for virtually all future machines. Part of the reason is that it supports virtual memory. System 7.0

will let you set up your SE/30 so that it thinks it has up to several gigabytes of main memory (assuming you have a correspondingly large hard disk on which to spool the information, of course). If you're a heavy MultiFinder user, you'll be unhappy if you can't take advantage of the virtual memory abilities in System 7.0. Moreover, once developers start making use of the IAC (interapplication communications) functions in System 7.0, you'll want to run multiple programs simultaneously. These benefits are all on top of the basic speed improvements and additional disk capacity you'll get by upgrading your SE to an SE/30; heck, even your current hard disk will run faster with the new system board installed.

Conclusion for SE owners: Upgrade to an SE/30. Short of that, add memory and consider getting a high-performance ac-

celerator like the Radius 25MHz model, which outruns a stock Mac II on most tasks. The downside to getting a non-68030 accelerator is that you won't be able to use the virtual memory abilities of System 7.0. In time, inexpensive 68030 accelerator options are likely to appear as well, but it's hard to predict when and for how much at this juncture.

WHAT YOU DON'T NEED

For the time being, you don't need to consider upgrading your 800K drives to 1.4MB. Plus and SE owners can always add a 1.4MB external floppy in the future, if necessary. The same logic applies to hard disks: what you have now is probably fine, but if it turns out that it isn't, you can always add another one externally.

You also don't need to buy a color display, or even a bigger monochrome display. For right now, the 9-inch monitor in the Plus and SE will still work with all noncolor software products. SE/30 owners have a slight advantage in that they can directly upgrade to Mac II-compatible color displays, but personally I think that external displays defeat the whole reason to buy a compact Mac Plus or SE in the first place.

You don't need to buy a new printer. In fact, if you've got a LaserWriter SC, the scaling outline fonts in System 7.0 will actually give you PostScript-like text abilities. The same applies, albeit at lower resolutions, to any ImageWriter model you currently have. Your current keyboard and mouse are also just fine. Any modem or other peripheral you have should work just fine with the new System (some will get additional capabilities!).

To summarize: You'll need 2MB or more of RAM and a faster processor—preferably a 68030—to take full advantage of System 7.0. If you've already got them, congratulations; you've succeeded in anticipating the changes. If not, you've got some serious thinking ahead of you. ■

Thom Hogan is president of Macreations, developer of Tycho; publisher of The Macintosh II Report; and author of The Programmer's Macintosh Sourcebook (Microsoft Press, 1989).

Circle 291 on reader service card.

REMOVABLE. ERASABLE. OPTICAL. REMARKABLE!

REO-650 single-drive system
\$4,995

REO-1300 dual-drive system
\$9,990

650/600 Meg optical cartridges:
\$250 each

Interface kits for Macintosh,
Sun, HP, IBM-AT, XT, PS/2
and compatibles:
\$995 each

Pinnacle Micro delivered the first removable, erasable, optical storage systems for the Macintosh.

The REO-650 is a single drive, SCSI system. The REO-1300 is a dual-drive system. Up to 1.3 gigabytes of facts and figures at your fingertips!

Each optical cartridge holds up to 650 megabytes of precious memories. Graphics. CAD files. Databases. Images.


You can write, erase and rewrite data... file by file... a million times or more.

Interface kits give you the flexibility to use Pinnacle drives with the workstation of your choice: Macintosh, Sun, HP, IBM-XT, AT, PS/2 and compatibles.

Software provided with each kit supports a host of working environments: UNIX, Xenix, Novell Netware 2.1, and many more.

Removable, erasable, optical. The new standard in mass storage and file server technology. Available now from Pinnacle Micro.

Call today for the location of your sales representative or authorized dealer.

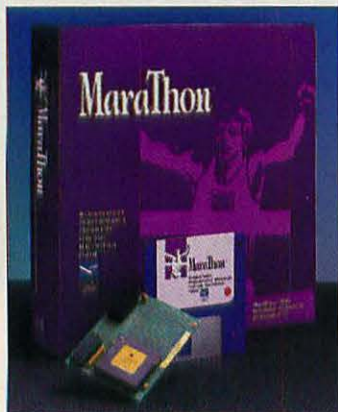
 (800) 553-7070

PINNACLE MICRO

OVERNIGHT DELIVERY
ONLY \$3.00
 (See details below)

GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.



Marathon 030 (Dove)

Put a fast running 68030 chip into your Mac II with this Marathon board. Features a 256K bytes internal data cache, 256 bytes of instruction cache, and full 32 bit microprocessor operating at 32MHz. Quick and easy installation. (accelerators) \$969.

Marathon 030X

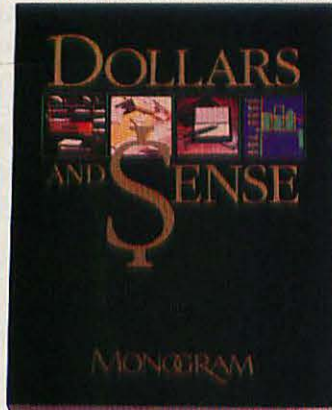
Designed specifically for the Macintosh IIX, plugs into the existing 68030 socket and features a Motorola MC68030 microprocessor, operating at 32 MHz, has a built-in Paged Memory Management Unit available for A/UX systems. Improves intensive applications, and other processor-demanding operations. (accelerators) \$999.

ACCESSORIES

Apple	
Toner Cartridges LaserWriter	109.
Avery Labels (full line available)	
Color Coded 3.5 Diskette	4.
Laser 3.5 Diskettes	29.
Laser File Folders	6.
Laser Transparencies	22.
Basic Needs, Inc.	
HardTop Keyboard Covers	15.
HardTop ImageWriter Covers	17.
Nylon Ripstop Dust Covers - grey only	
ImageWriter or LaserWriter	12.
Mac Plus and keyboard	11.
Mac SE and extd. or reg. keyboard	11.
Mac II and extd. keyboard	12.
Utility Pac	11.
Computer Friends, Inc.	
MacInker (IW & IW II)	41.
MacInker Black Ink	3.
Curtis	
Computer Tool Kit (52 pc.)	49.
Curtis Clip	6.
Disk Holder (holds 40)	9.
Jewel Surge Suppressors	
Free Curtis Clip with purchase	Call.
Ergotron	
MacTilt-SE	68.
MacTilt II-RGB	75.
Goldstein & Blair	
The Macintosh Bible	20.

I/O Designs

ImageWare II Carrying Case	49.
MacinWare IIX Carrying Case	89.
MacinWare Mac II Carrying Case	99.
MacinWare Plus Carrying Case	64.
MacinWare SE Carrying Case	75.
MonitorWare Apple RGB Case	79.
Ribbons black	4.
Ribbons color	5.
Kalmar	
Rolltop Teak disk holder 45	14.
Rolltop Teak disk holder 90	21.
Rolltop Teak disk holder 135	31.
Kensington	
Anti-Glare Filter	33.
Apple Security Kit	34.
Mac II Stand w/Cable Kit	65.
MasterPiece Mac II	105.
PowerBacker 330 UPS Line	269.
System Saver	64.
MacWarehouse	
Mouse pad	7.
Mobius Products	
Fanny Mac QT	60.
SE Silencer	39.



Dollars and Sense (Monogram)

Cash flowing in the wrong direction? Turn the tide with Dollars and Sense, the complete financial management program. Balance sheet? Chart of accounts? Customized reports? They're just a few of the financial insights you can gain. Other features include: automatic double entry accounting, check printing, "What if?" bill paying; and import/export to/from most popular spreadsheets. If you'd like to make a positive financial statement or just an assessment of your personal value - let Dollars and Sense take charge of your finances. (finance) \$81.

Orange Micro

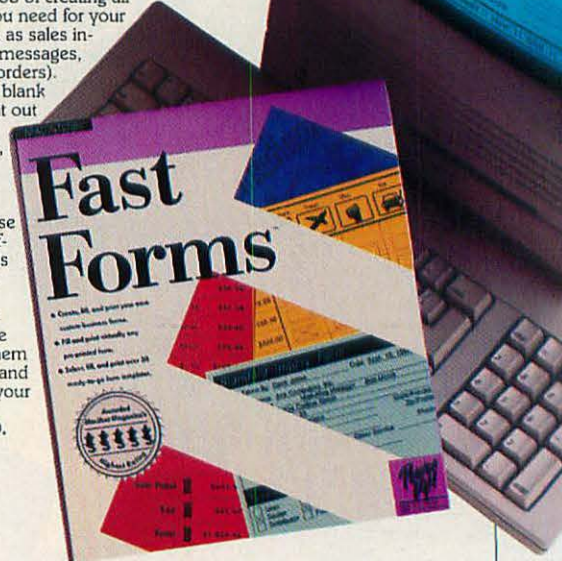
Grappler L/Q or LS	103.
Polaroid	
Circular Polarizing Filter	35.
Read-Write	
CompuDuster	29.
Kleen & Dry CRT Pads	5.
Computer Care Kit	45.

WordMaker (New Horizons)

The new high performance, personal word processor for the Macintosh. WordMaker's intuitive design makes it easy to learn and to use. It has a fast WYSIWYG display, headers and footers for both left and right pages, color capability, multiple document support, a 100,000 word spelling checker, print merge, and more! With WordMaker you can even wrap text around irregularly shaped graphics. It reads and writes MacWrite files for compatibility with other programs. (word processing) \$69.

FastForms! Construction Kit (Power Up)

Simplifies the job of creating all those forms you need for your business (such as sales invoices, phone messages, and purchase orders). You can make blank forms and print out and fill in manually. But, for a Mac equipped business you can design these forms with self-calculated fields and automatic formatting for parts numbers and dates. Use the DA to fill them out on-screen and store them in your database. (business) \$89.



Static Stopper Spray	11.
Smack-a-Mac	
Smack-a-mac	9.
SoundSight	
FastKeys	39.
Targus, Ltd.	
Deluxe Plus/SE-XKB Case (black)	75.
ImageWriter II Case (black)	49.
Mac Plus/SE Case (black)	59.

ACCOUNTING AND PERSONAL FINANCES

Aatrix	
Checkwriter	37.
Payroll 3.5	109.
Payroll PLUS	155.
TimeMinder	155.
Bedford (Computer Associates)	
Simply Accounting	209.
Brown-Wagh Publishing	
MacLedgers	159.
Service Industry Accounting	209.
DAC	
Dac-Easy Light	42.

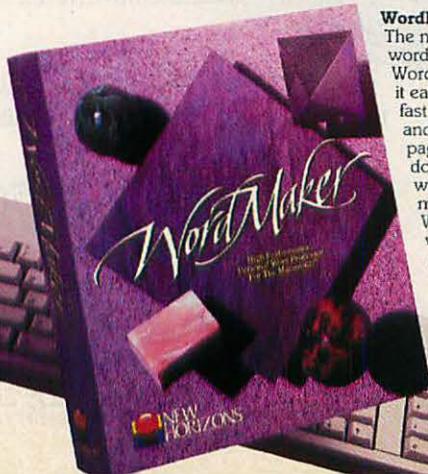
PixelPaint Professional (SuperMac Software)

The first "true color" universal paint program for the Mac. Designed to grow with you from 8-bit to 32-bit systems. From general painting to advanced design. Use advanced masking, image merging, fill effects, dithering, distortion and perspective for advanced graphics. True-color features like anti-aliasing for smooth shapes, a realistic airbrush, and transparency control allow you to create, scan and modify photographic quality images. (graphics) \$409.

Intuit	
Quicken 1.5	37.
MECA	
Managing Your Money	125.
Monogram	
Business Sense	269.
Dollars and Sense	81.
Peachtree	
Back to Basic Professional	159.
ShopKeeper Software	
Bill-It	99.
Survivor	
MacMoney 3.5	60.

BLANK MEDIA

B.A.S.F. made in U.S.A.	
DS/DD (box of 10)	15.
DS/High Density (1.44 Meg)	29.
Maxell	
DS/DD (box of 10)	19.
Peripheral Land, Inc.	
Turbo 40 Cartridge	115.
Sony	
DS/DD (box of 10)	15.

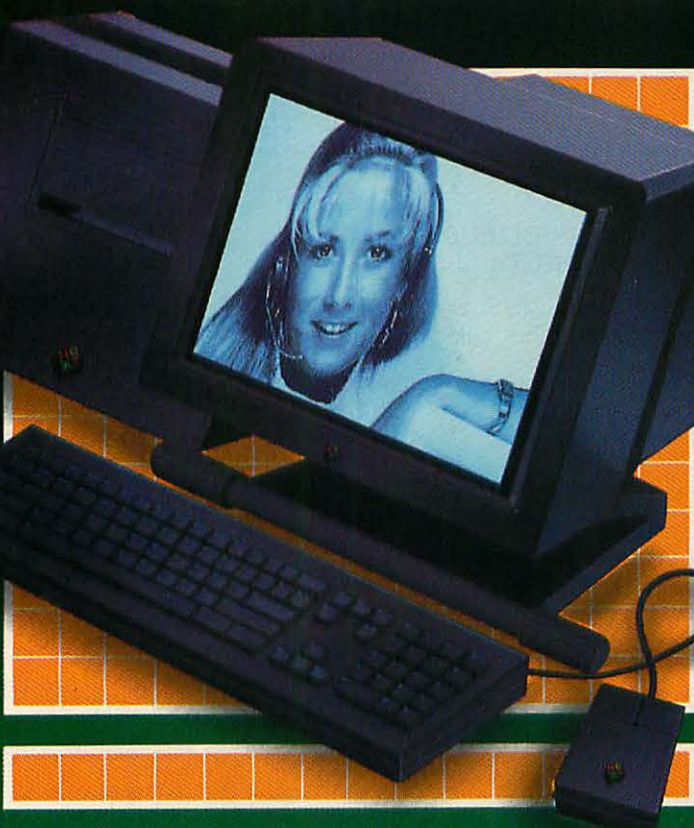


Win

THE NeXT COMPUTER

Just imagine yourself as the winner of the most powerful personal computer ever built! More RAM, more speed, incomparable CD quality sound — Steve Job's personal computer of the 1990's.

All you have to do is enter the brand new MACWAREHOUSE SUPER COMPUTER GIVEAWAY. Your name is automatically entered into the drawing when you order from MacWAREHOUSE. (Or just send in the Official Entry Coupon.)



If you're already a MacWAREHOUSE customer you know that nobody beats our fast, dependable, over-night service. Our friendly staff of Macintosh fanatics is standing by to help you, seven days a week.

So, call our toll free number and find out about our 30 day MONEY BACK GUARANTEE, \$3 overnight delivery service, free loaner drives and much more. For price, quality and service you won't find a better source than MacWAREHOUSE.



FREE CATALOG

We carry more than 1200 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. If you can't find what you need call us for a free copy of our latest catalog.

Vantage (Preferred Publishers)

This powerful multi-purpose text editing desk accessory can open and edit any kind of text file. Vantage works with any font, size or color and contains an 80,000 word Webster's dictionary. Built-in macro language included. (desk accessories) \$55.

Database A full feature database desk accessory that can store and quickly retrieve graphics, color pictures and multi-font text. Imports from most applications and exports DIRECTLY to many, replacing or enhancing many programs with one powerful and expandable data management package. Pop-up menus, calculated fields and background graphics create an environment that is both powerful and fun to use. (desk accessories) \$72.

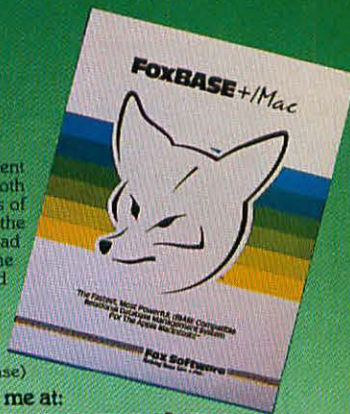


KeyPlan (Symmetry)

KeyPlan simplifies project management, so you can get the job done. Start with the outline, where you can put your ideas in order. KeyPlan instantly converts your outlines to charts. Charts and graphics include PERT, GANTT, area, line, bar, and scatter. Just click the mouse and move to any view. KeyPlan adapts to your style. (business) \$339.

FoxBase +/ Mac 2.0 (Fox Software)

The premier Macintosh database management system. Create virtually any report output in both columnar or free-form styles. Produce labels of almost any size and configuration. Look at the actual output you'll create before you print! Load up to 16 external XCMD'S and XFCN'S at one time. Access these external functions and commands directly from within FoxBase+ programs. Also, insert pictures, graphics or logos anywhere in your report. Prepare reports that combine data from up to 10 related databases, plus much more. (database) \$255.



I'm Kerry, call me at:

MacWAREHOUSE
1-800-255-6227

(1-800-ALL MACS)

Inquiries: 201-367-0440

Canada: 800-255-6447

FAX # 201-905-9279

MONDAY THRU FRIDAY

8 A.M. TO 11 P.M. (Eastern Time)

SATURDAY

8 A.M. TO 8 P.M. (Eastern Time)

OPEN SUNDAYS!

8 A.M. TO 8 P.M.
(Eastern Time)

OFFICIAL ENTRY COUPON

MWK9

MacWarehouse Computer Giveaway

1690 Oak Street, P.O. Box 1579, Lakewood, NJ 08701

When you order by phone or mail, you are automatically entered in the drawing. You can also mail this coupon or call our contest entry line. 1-800-367-0787.

Name _____

Address _____ Apt. _____

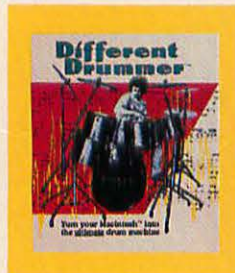
City _____ State _____ Zip _____



FROM MacWAREHOUSE™



BASF 3.5" High Density Micro Diskettes
High 1.44 meg. capacity diskettes with no capacity for error. Every bit, every byte, on every track of each BASF 3.5" Micro Diskette is certified 100% error-free, warranted for life. Made in the U.S.A. (blank media) \$29. Double Density also available for \$15.



Different Drummer
March to the tune of a MIDI drummer. Compose patterns, songs and jams. Sound output via Mac or MIDI, exports MIDI files for use with sequencers. Enter notes in real time, or drag notes into place with the mouse. Very easy to use! (music) \$59.



Managing Your Money
A fully integrated software program addressing every aspect of personal and small business finance. Write and print checks, set up a personal budget, estimate your taxes and more. (finance) \$125.



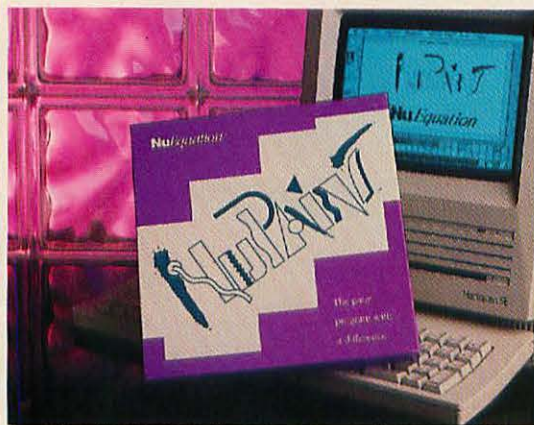
Dust Covers
Basic Needs dust covers look great! Machine stitched and custom fitted. The covers are made from washable rip-stop nylon and won't crack, yellow, or fade like similarly priced vinyl. (accessories) Starting at \$11.

Preferred Publishers

Database	72.
Vantage	55.
Solutions	
SmartScrap & The Clipper 2.0	45.
TENpointO	
Open IT!	49.

DESKTOP PUBLISHING PRODUCTS

Aldus	
PageMaker 3.01	389.
Color Extension	179.
Blue Sky Research	
Textures	375.
Broderbund	
DTP Advisor	47.
Emerald City Software	
Smart Art I—Text Effects	89.
Icom Simulations	
MacKern	119.
Letraset	
ColorStudio	Call
ImageStudio	275.
Ready, Set, Go!	275.
Olduvai	
Read-It! 2.0 (OCR)	249.
Read-It! Personal	99.



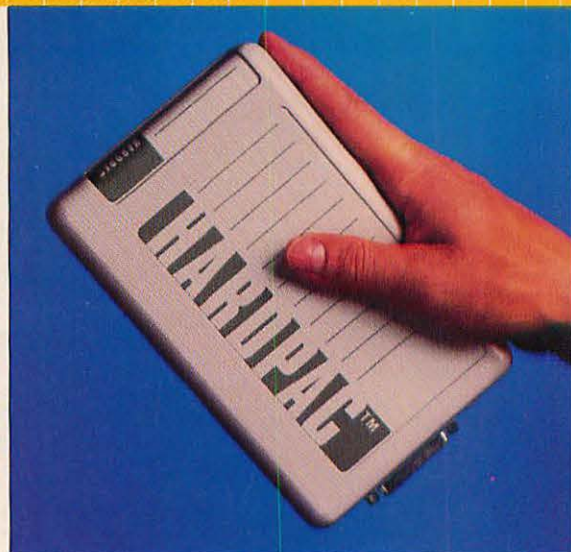
Read-It! TS (Thunderscan)	79.
Quark	
QuarkStyle	175.
Xpress	495.
Springboard	
Springboard Publisher	109.
U.S. MicroLabs, Inc.	
FontSizer	79.

DISK DRIVES/BOARDS

Aristotle Industries, Inc.	
HardPac Mac 20 Meg	549.
HardPac Mac 40 Meg	799.
HardPac Mac 80 Meg	1195.
HardPac Mac 105 Meg	1395.
CMS	
MacStack 20 Meg	529.
MacStack 30 Meg	545.
MacStack 45 Meg	625.
MacStack 60 Meg	699.
MacStack 80 Meg	799.
Cutting Edge	
800K External Floppy Drive	149.
Under the Mac 20 Meg	439.
Under the Mac 30+ Meg	499.
Under the Mac 40+ Meg	549.
Under the Mac 65+ Meg	629.
Under the Mac 80+ Meg	739.
Dayna Communications	
Dayna File Single 360K (5 1/4")	529.
Dayna File Dual 360K & 1.44M	669.
Dolphin Systems Tech	
Integra 20 Meg	549.
Integra 30 Meg	599.
Integra 40 Meg	769.
Integra 60 Meg	819.
Integra 80 Meg	1179.
Flipper 150 Meg Tape Backup	1439.
Flipper Removable 44 Meg	1139.
Kennect Technology	
Drive 2.4	375.

HardPac Mac (Aristotle)

Portable hard disk drive. Store your data and just unplug this compact, self-contained unit, tuck it into your briefcase, and take your data with you. The sturdy injection molded case, shock mounting, and automatic head parking protect the drive while it's in transit. HardPac Mac is a SCSI device with an input and output port for daisy-chaining. The SCSI address select switch allows you to plug it in without disrupting the host system. (drives)
20 meg \$549
40 meg \$799



NuPaint (NuEquation)

NuPaint offers improvements on all the standard paint program functions plus a host of new tools, such as masking tape, razor, trowel, shadow, smoothing, halftoning, and high resolution bitmap editing. The mixing bowl randomly stirs up the dots to create a more realistic appearance. Borders and backgrounds can have up to 32 by 32 pixels. NuPaint provides up to 13 viewing and manipulating modes, including a double window show page. (graphics) \$89.

Davidson	
Math Blaster	27.
Speed Reader II	36.
First Byte	
The Dinosaur Discovery Kit	27.
The Puzzle Storybook	27.
The Rhyming Notebook	27.
Fair Tide Technologies	
Navigate! mono	209.
Great Wave	
KidsTime 1.2	26.
NumberMaze	26.
Learning Company	
Reader Rabbit	31.
MicroTech	
Elementary Signer	49.
Finger Signer	29.
The Software Toolworks	
Mavis Beacon Teaches Typing	35.
Voice & Video Instruction Videos	
HyperCard or Pagemaker 3.0	ea 35.
Word 4.0 Video Tape	35.

ENTERTAINMENT

Access Software, Inc.	
World Class Leader Board	27.
Artworx	
Daily Double Horse Racing	19.
GrailQuest	19.
Broderbund	
Ancient Art of War At Sea	27.
Shufflepuck Cafe	24.
Where in the World is Carmen	27.

EDUCATIONAL PERSONAL

BrightStar	
Alphabet Blocks 3.01	30.
Talking Tiles	69.
Bootware Software	
ResumeWriter Pro	60.

Macintosh SE/Plus w/Extended Keyboard Carrying Case (Targus)

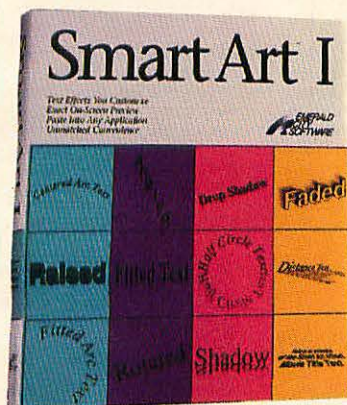
Pamper your Mac with a Targus carrying case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for everything from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. Full Targus Macintosh line some available in black, blue, burgundy, and platinum. (accessories) \$75.



MORE FOR YOUR MONEY...

BUSINESS AND PRESENTATION

DelatPoint, Inc.	
Trapeze 2.1	149.
Adobe Systems, Inc.	
TrueForm SetUp	275.
AEC Management Systems	
FastTrack Schedule	115.
Aldus	
Persuasion 1.0	375.
Ashton-Tate	
Full Impact	249.
Avery	
List & Mail	79.
BreakThrough Productions	
Market Master P/A	245.
Claris	
MacProject II	379.
SmartForm Designer w/Assistant	299.
Cognition Technology	
MacSMARTS PRO	249.
Cricket	
Cricket Graph 1.3	115.
Cricket Presents	289.
HyperPress Publishing	
Intelligent Developer	225.
Informix	
WingZ	259.
MetaComet	
Accu-Weather Forecaster	59.
Microsoft	
Excel 2.2	249.
PowerPoint 2.1	249.
Works 2.0	185.
Nolo Press	
For the Record	29.



SmartArt-I Text Effects (Emerald City Software)

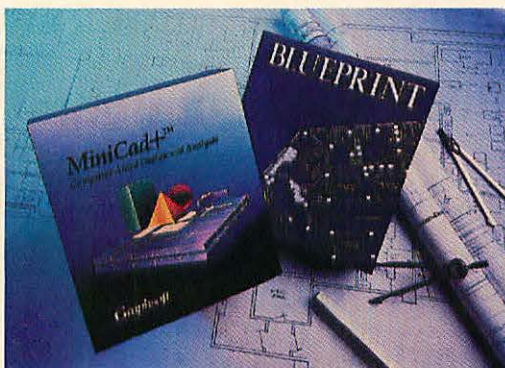
Bring custom text effects to your favorite word processor, page layout or presentation program. Smart Art uses PostScript language inside your laser printer to preview precisely how your effect will print. Rotate text, fit text to exact size; modify effects instantly. SmartArt comes with 15 of the most wanted text effects. You don't have to be an artist to look like one! Requires Mac SE, Plus or II and a PostScript laserprinter. (desktop publishing) \$89.

WillMaker	32.
Power Up	
Calendar Creator	38.
FastForms!	89.
ProPlus	
Wall Street Investor	469.
Satori	
Bulk Mailer 3.2.3	78.
Softview	
FormSet	52.
MacInUse	42.
Symantec	
More II 2.01	255.
Symmetry	
KeyPlan	339.
Synex	
Mac Envelope 4.1	55.
Vertical Solutions	
FastLabel	49.

MiniCad+ 2.0 (Graphsoft)

This year MiniCad+ is the people's choice, winning both the U.S. and Australian MacWorld World Class Awards for CAD. For the price of most 2D CAD packages, MiniCad+ provides 2D, 3D, a hotlinked spreadsheet and a programming language. The quality is unsurpassed. \$519.

Blueprint
This new professional-level 2D CAD program has it all at an unbelievable price. Layers, fillets, DXF, constraint Palette, high precision, auto-dimensioning, hatching, symbol library, encapsulated postscript plus more. (cad/cae) \$349.



CAD/CAE

Claris	
ClariscAD	599.
Generic Software	
Generic CADD Level 1	85.
Symbols Libraries available	Call
Graphsoft	
Blueprint	349.
MiniCad Plus	519.
Innovative Data	
MacDraft	144.
Dreams	269.
I.S.I.	
Precision	399.

COMMUNICATIONS

CE Software	
QuickMail 2.0 (1-10 Users)	259.
CompuServe	
CompuServe Navigator	45.
CompuServe Subscription Kit	24.
DataVIZ	
MacLink Plus w/Cable	139.
MacLink Plus/Translators	115.
Dow Jones	
News/Retrieval Membership	24.
FreeSoft	
Red Ryder 10.3	52.
Hayes	
Smartcom II 3.1	88.
Infosphere	
Liaison	179.
InSignia Solutions	
Soft PC (Mac II)	249.
Prometheus	
Acknowledge	299.
MacKnowledge	149.
Software Ventures	
Microphone II v.3.0	219.

- VISA and MASTERCARD accepted. No surcharge.
 - Your credit card will not be charged until your order is shipped.
 - If we must ship a partial order, we pay the freight on the remaining portion.
 - All U.S. shipments are insured at no extra charge.
 - C.O.D. orders accepted (add \$6.00 including shipping) — \$1,000 maximum.
 - Cash, money order, or cashier's check.
 - Corporate purchase orders accepted subject to credit approval.
 - All products are covered by a 120 day limited warranty.
 - CT residents add 8% sales tax. NJ residents add 6.0% sales tax.
- SHIPPING**
- All orders add \$3.00 per order. We ship Airborne Express overnight unless UPS ground delivers overnight. (Some rural areas require an extra day.)
 - Orders placed by 7:00 pm Eastern time (weekdays) for "in stock" items ship same day (barring system failure, etc.) for overnight delivery.
 - C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS ground). Charge is \$6 including shipping.
 - Alaska, Hawaii, outside continental U.S., APO/FPO call 201-367-0440 for information.

*Defective software replaced immediately. Hardware replaced or repaired at our discretion.

I'm Kerry, call me at:

1-800-255-6227

(1-800-ALL-MACS)

Inquiries: 201-367-0440 Canada: 800-255-6447 FAX # 201-905-9279

MacWAREHOUSE™

1690 Oak Street, P.O. Box 1579,
Lakewood, NJ 08701
MONDAY THRU FRIDAY 8 A.M. TO 11 P.M. (Eastern Time)
SATURDAY 8 A.M. TO 8 P.M. (Eastern Time)
OPEN SUNDAYS! 8 A.M. TO 8 P.M. (Eastern Time)

Synergy	
Versa Term Pro 3.0	175.
Traveling Software	
Lap-Link	83.

DATABASE SOFTWARE

Acus	
4th Dimension	349.
AEC Management Systems	
AEC Information Manager	415.
Ashton-Tate	
dBase Mac	295.
Claris	
FileMaker II	229.
Fox Software	
FoxBASE+/Mac	255.
FoxBASE+/Mac MultiUser	355.
FoxBASE+/Mac Runtime	269.
Microsoft	
File 2.0	125.
Odesta	
Double Helix II	339.
GeoQuery	199.
ProVUE	
Panorama	205.

DESK ACCESSORIES

Affinity	
AffiniFile	45.
Casady & Greene	
QuickDEX	31.
Exodus Software	
ExpressWrite	65.
Retriever	59.
JAM Software	
Smart Alarms & Appointment Diary	49.
Smart Alarms (1 - 4 users)	99.
Smart Alarms (5 - 8 users)	149.
Smart Alarms (9 - 16 users)	199.

MWK9

FastLabel

End label hassles with FastLabel - the revolutionary way to print labels on the Imagewriter and Laserwriter. Preformatting instantly creates labels. One step text loading from any commercial database. Save hours of your valuable time! (business) \$49.



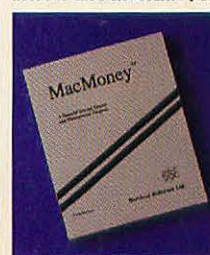
POWERmenus

Put your menus where your mouse is. No matter where your mouse pointer is, you can have access to any menu with just a command click or a triple-click. Works with every Mac application without exception! End multi-monitor frustration and needless mouse movements. Also comes with eight POWERgadgets. (utilities) \$39.



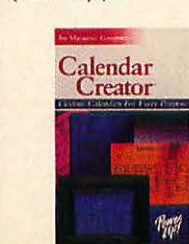
MacMoney 3.5

Real accounting for the real home budget. Tells you what's due and when! Tracks expenses, credit cards, assets, liability, cash or income accounts. Create up to 250 named categories. (finance) \$61. For the business user there is also InvoicIt. \$49.



Calendar Creator

Now you can keep any annotated calendar, from corporate to personal, neat, accurate, and up-to-the-minute. You can make separate calendars for each person in your office, family, or other group, then merge them into over 100 kinds of daily, weekly, monthly, and yearly calendars. (business) \$38.



GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

OVERNIGHT DELIVERY ONLY \$3.00

NEW Version 1.5!

Quicken (Intuit)

Forget Financial hassles with Quicken, the world's #1 selling finance software. It's the absolute fastest, easiest way to do your personal or small business book-keeping. Quicken slashes the time you spend on your finances by automating all your routine financial tasks, from printing recurring checks without typing, to providing detailed tax deduction summaries instantaneously. Flexible, comprehensive financial reports on screen or on paper, income and expenses by category, budget vs. actual comparisons, and more. (finance) \$37.

Joseki Tutor	30.
PCAI/XOR	
Lunar Rescue or MacGolf 2.0	34.
MacGolf Classic	53.
Road Racer	39.
NFL Challenge	54.

Bullseye

Ferrari Grand Prix or P51	ea 32.
Fokker Tri-plane	25.

Centron Software, Inc.

BlackJack or CrapsMaster	ea 27.
CasinoMaster (5 pack)	49.

Discovery Software

Arkanoid	26.
----------	-----

Electronic Arts

Starfleet I: The War Begins	36.
Chuck Yeager Adv. Flight Trainer	32.

HyperPress Publishing

Silver Screen	40.
---------------	-----

Miles Computing

Fool's Errand	32.
---------------	-----

Puzzle Gallery

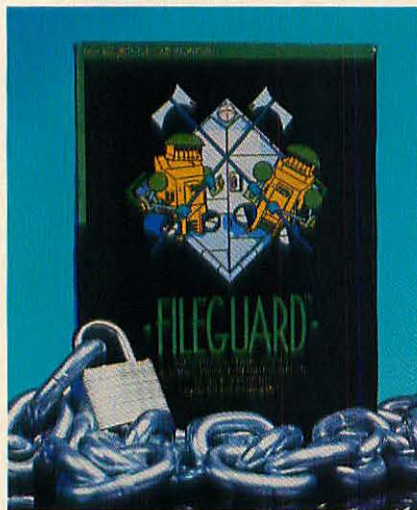
	27.
--	-----

Mindscape

Balance of Power, Deja Vu	ea 30.
---------------------------	--------

Nemesis

Go Master	49.
-----------	-----



Automatic protection with **FileGuard (A.S.D)** Operating totally transparently, FileGuard is the integrated encryption utility that provides the most comprehensive and transparent solution to today's security and confidentiality problems. Upon saving a new document, FileGuard gives you the option to password-protect it. Encryption is performed automatically when you quit your application. Opening protected documents is just as easy and automatic. When you double-click on an encrypted document, FileGuard asks for your password, then immediately decrypts and launches the appropriate application. The document is automatically re-encrypted when you quit. (utilities) \$129.

Spectrum HoloByte

Falcon 2.0	32.
PT109 or Gato	ea 26.
Solitaire Royale or Tetris	ea 20.

Springboard

Hidden Agenda	36.
---------------	-----

The Software Toolworks

Chessmaster 2100	32.
Life & Death	34.

The Hunt for Red October	32.
--------------------------	-----

Fonts

Adobe

Fonts (all avail.)	Call.
Forms and Schedules	289.

Newsletters	239.
-------------	------

Presentations	289.
---------------	------

Textures, Fills, and Patterns	139.
-------------------------------	------

Altsys

Fontastic Plus 2.02	52.
---------------------	-----

The Art Importer	69.
------------------	-----

Beyond, Inc.

MenuFonts 2.02	28.
----------------	-----

General Computer Company

Fonts Plus Package	250.
--------------------	------

Letraset

LetraStudio	275.
-------------	------

LetraFonts (various)	ea 69.
----------------------	--------

Tactic Software

ArtFonts Vol.1 or 2	55.
---------------------	-----

Orange Micro

Alphabits	69.
-----------	-----

Graphics and Design

3G Graphics

Images w/Impact	
-----------------	--

Graphics & Symbols 1	52.
----------------------	-----

Business 1	65.
------------	-----

Adobe

Illustrator 88	289.
----------------	------

Streamline	229.
------------	------

Aegis Development, Inc.

Showcase F/X	199.
--------------	------

Aldus

Freehand 2.0	349.
--------------	------

Broderbund

Drawing Table	75.
---------------	-----

PosterMaker Plus	35.
------------------	-----

Casady & Greene

Vivid Impressions Vol. 1	67.
--------------------------	-----

Claris

MacDraw II 2.0	309.
----------------	------

MacPaint 2.0	99.
--------------	-----

Cricket

Cricket Color Paint	179.
---------------------	------

Cricket Draw	168.
--------------	------

Cricket Paint	99.
---------------	-----

Deneba

Canvas 2.0	169.
------------	------

Dream Maker

Cliptures, Business Images	85.
----------------------------	-----

MacGallery	27.
------------	-----

Electronic Arts

Studio/1	99.
----------	-----

Studio/8	299.
----------	------

MacroMind

MacroMind Director	449.
--------------------	------

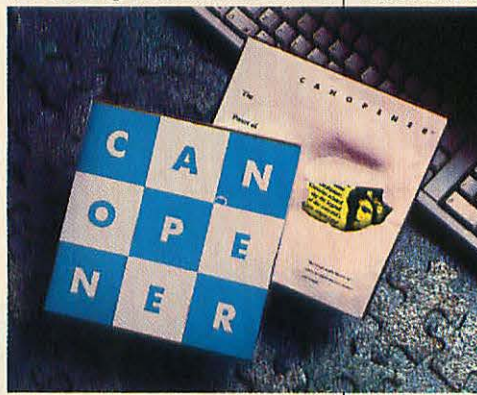
VideoWorks II	199.
---------------	------

VideoWorks II HyperCard Driver	60.
--------------------------------	-----

CanOpener

(Abbott Systems)

CanOpener is the information retrieval utility for the Mac. CanOpener will search anywhere, and lets you retrieve just about anything; including text, pictures and sounds. It even locates text inside pictures, and gives you the whole picture! Anything you retrieve with CanOpener can be stored in its library, so the next time you need it, it's just a click away. All this means is: "You spend less time locating information and more time using it." (utility) \$65.



Miles

Mac The Knife (all volumes)	39.
-----------------------------	-----

Multi Ad Services

ProArt: Bus., Sports or Holidays	ea.95.
----------------------------------	--------

ProArt: Trilogy CD format	229.
---------------------------	------

NuEquation

NuPaint	89.
---------	-----

Paracomp

Swivel 3D	289.
-----------	------

Silicon Beach

Digital Darkroom	259.
------------------	------

Super 3D 2.0	325.
--------------	------

SuperPaint 2.0	128.
----------------	------

SuperMac

PixelPaint 2.0	199.
----------------	------

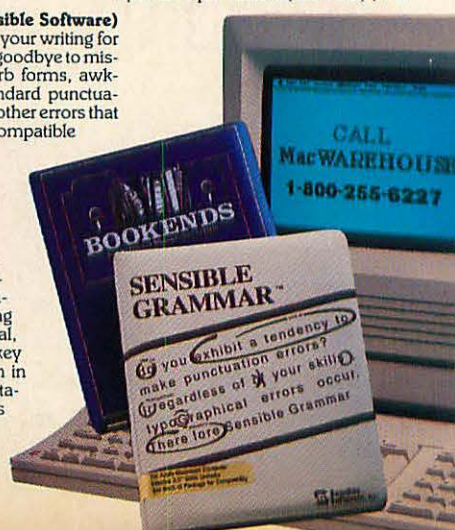
PixelPaint Professional	409.
-------------------------	------

Sensible Grammar (Sensible Software)

Over 4000 rules to check your writing for grammatical errors. Say goodbye to mismatched subject and verb forms, awkward language, non-standard punctuation, long sentences and other errors that weaken your writing. Compatible with Works, Word, Mac-Write and text files. \$53

Bookends

A specialized reference management system database for finding information and printing bibliographies. Store information you need including author, title, editor, journal, page volume, date, and key words. Find information in magazines, books, dissertations, and newspapers quickly and effortlessly. (spelling checkers) \$53.



FastTrack Schedule

Produces financial charts in outline format. Open them up for more detail or collapse to see the "big picture". It won't take up your time with complicated setup and extensive data entry. Print informative charts and graphics. (business) \$115.



Harmony Grid

An extensive harmony kit. Flexibility sets it apart from other performance-oriented algorithmic programs. Customize chords and scales, personalize performances, making them feel jazzy, bluesy, etc. MIDI recommended, not required. (music) \$59.

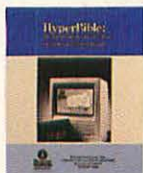


Bulk Mailer 3.23 The ideal mail list management system. Duplication elimination, sorting capabilities and search codes, utilizes all fonts and styles, mail merge, envelope printing, plus much more. Works with Canadian and other international postal requirements. (business) \$78.



Mac-101 Keyboards

Features 101 keys including a numeric keypad, a separate T-shaped cursor keypad, Cancel Key, Option and Command keys at both ends, definable function keys, plus scrolling, page control, and zooming keys. Manufacturer's two year warranty. International Versions also available. (input/output) \$139.



HyperBible

Put a new life into your study of the Bible. Over 100,000 notes and cross references. Easy word and phrase search of scripture. Ready made studies for meetings. Available in the New International Version \$179. or the King James Version (hyperware) \$149.



Avery Laser Printer Labels

These Avery labels are designed especially for laser printers. They won't melt or peel inside your printer, and they will pass through without jamming. Now you can add logos and other graphics to your own diskette labels, file folder labels, and mailing labels. **CALL.**



List & Mail for the Mac

Avery's new mailing list management program with graphic capabilities. Sorts, selects, and prints up to 64,000 addresses. Addresses can be entered or imported. Includes label templates for all Avery products designed for Imagewriters and Laser-Writers. (business) \$ 79.

Tactic Software

Art Clips	59.
Zedcor	
Deskpaint 2.0	65.

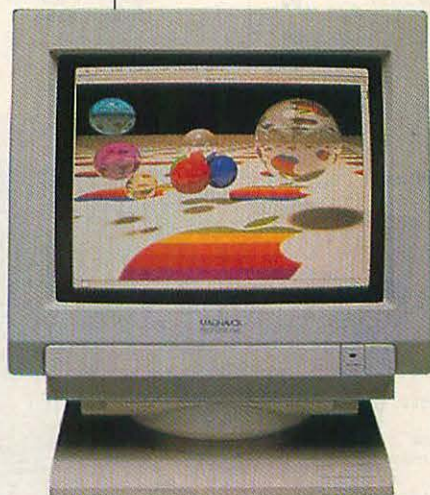
HARDWARE AND PERIPHERALS

Cambridge North America

Z88 Portable Computer	699.
Z88 AC Adapter	9.
Z88 Pocket Modem	225.
Z88 512K RAM Cartridge	359.
The Complete PC	
Half-Page Scanner	379.
Page Scanner	799.
DEST	
Dest PC Scan Plus	SPECIAL 799.

Mac II Color Monitor (Magnavox)

The Magnavox 9CM080 Mac II Monitor is fully compatible with Apple's Macintosh II computer when equipped with a high resolution color card (Apple #MO211). The monitor is a 14" diagonal and features a super fine .29 dot pitch. Analog inputs allow you to display up to 256 colors on a pallet of 16 million, with a resolution of 640 X 480 using Apple's expansion kit (#MO213). The monitor includes cables and has a two year parts and labor warranty. A great value. (hardware) \$599.



General Computing Company

WriteMove Ink Jet Printer	585.
Magnavox	
Color Monitor 14"	599.
Seikosha America	
Seikosha Printer (dot-matrix)	235.
ThunderWare	
LightningScan	409.
ThunderScan 5.0	189.

HYPERWARE

Activision	
Focal Point II	117.
Reports for HyperCard	69.
Bantam	
Complete HyperCard Handbook	23.
Beacon Technologies	
HyperBible International Version ...	179.
HyperBible King James Version ...	149.
BrainPower	
ArchiText	175.
Bright Star Technology	
HyperAnimator	99.
HyperPress Publishing	
Script Expert	45.
ICOM Simulations	
HyperTMON	75.
MicroMaps	
HyperAtlas	64.
Power Up	
HyperTutor	29.

DeskPaint 2.0 and DeskDraw (Zedcor)

The Mac's most powerful paint DA now bundled with the Mac's most powerful draw DA. Includes Auto Trace, Browse and on-line help. MacPaint, compatible. (graphics) \$65.

ZBasic 5.0

New and improved version - 256 colors, all toolbox routines and MS basic conversion program now bundled with The Program Generator, a draw-like editor that takes the grunt work out of writing REAL Macintosh applications. (language) \$95.

Silicon Beach

SuperCard	129.
Springboard	
Family Matters	28.
Symmetry	
HyperDA	35.
TimeWorks	
HyperWorks Organizer	60.



Microsoft.

QuickBasic	65.
Shana Corporation	
Inside Out	369.
SmethersBarnes	
Prototyper	149.
Symantec	
Lightspeed C 4.0	169.
Lightspeed Pascal	89.
Zedcor	
ZBasic 5.0	95.

MEMORY UPGRADES/ACCELERATORS

1 MEG SIMMS

Low Profile, 100ns High Quality Single In-Line Memory Modules for MacPlus, SE, II, Ix. 2 yr. Warranty. **New low price \$139.**

Dove (full line available)

FastNet SCSI	785.
FastNet II	565.
FastNet III	375.
FastNet SE or SE/30	375.
MaraThon 030 Accelerator	969.
MaraThon 030X	999.
MaraThon Multi-Comm	315.
MacSnap 2S	349.
MacSnap 4S	698.

MacTilt (Ergotron)

Put your Mac on a MacTilt platform and you can adjust its position for maximum viewing and working comfort. It's one of the best under-\$100 investments you can make in your Mac and your personal comfort. You'll be more productive when those minor neck and back pains caused by improper viewing angles go away. The tilt covers a 30 degree angle, and the swivel goes around a full 360 degrees. (accessories) \$68.



Trendware Corporation

HyperTools #1 or #2	ea 52.
XCAL	85.

INPUT/OUTPUT

Cutting Edge	
CE-105 ADB Keyboard	125.
DataDesk Intl.	
Mac 101 Keyboards	139.
Kensington	
New Turbo Mouse	109.
Koala	
MacVision 2.0	219.
Kraft	
ADB Joystick Premium III (SE&II) ...	51.
Kurta	
IS/ADB Tablet 8 1/2 x 11	255.
IS/ADB Tablet 12 x 12	385.
IS/ADB Tablet 12 x 17	625.
Cordless 4 Button Cursor	65.
Mouse Systems	
A+ Mouse (512/Plus or SE/II)	Call.
Summagraphics	
Bit Pad Plus	325.

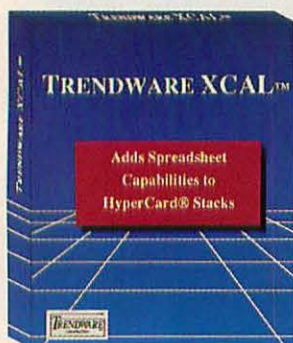
LANGUAGES

Digitalk, Inc.	
Smalltalk/V MAC	129.
Manx Software Systems	
Aztec C or Unitools	ea 65.
Aztec C+SDB or C+MPW	ea 99.

OVERNIGHT DELIVERY
ONLY \$3.00
(See details below)

GUARANTEE

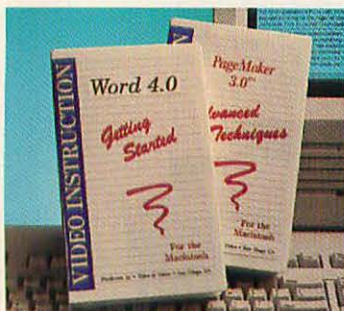
Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.



XCAL (Trendware Corporation)
XCAL adds spreadsheet capabilities to HyperCard with a transparent grid window that displays over cards in your stack. Create formulas similar to those available with most standalone spreadsheet programs by clicking on fields and buttons in the grid window. Perform calculations automatically when data is entered into a field or an object is clicked. Perform calculations on groups of cards and those matching a search criterion. Advanced capabilities can be achieved with the macro editor. (hyperware) \$85.

MODEMS/FAX

Abaton	
InterFax 12/48	325.
Best Data Products	
SmartOne 2400/1200	149.
Hayes	
Smartmodem 1200	299.
Smartmodem 2400	429.
Smartmodem 9600 (V series)	985.
Prometheus	
ProModem 2400 SE Int.	209.
ProModem 2400M	199.
STF Technologies	
FAXstf Modem	525.
Supra	
Supra Modem 2400	149.
US Robotics	
Courier 9600 Modem	699.



Video Instruction (Voice & Video)
Breeze through Mac software like PageMaker 3.01, Word 4.0 and HyperCard with the ease of an old pro. You'll have your very own one-to-one trainer on videotape. Each program is simple and easy to use, averaging 90 minutes in length with graphic examples. Titles include "Getting Started" for Word 4.0, Excel 2.2, PageMaker 3.01 and HyperCard. "Advanced Techniques" cover new software features for Word 4.0 and PageMaker 3.0. All the programs are professionally tested and produced. An entertaining, and easy way to get the most from your programs! (education) \$35.

MUSIC AND SOUND

Altech	
MIDI Interface	59.
MIDI Basic	30.
Bogas Productions	
Super Studio Session 2.0	69.
Coda	
MacDrums	31.
Perceive	50.
Electronic Arts	
Deluxe Music Construction 2.5	84.
Esthetic Engineering	
Music Mouse	49.
Farallon Computing	
MacRecorder (records sound)	165.
First Byte	
SmoothTalker	33.
Graphic Notes	
Music Publisher	375.
Great Wave	
Concertware+MIDI 4.0	78.
HIPP Software	
Harmony Grid	59.
Impulse	
Audio Digitizer w/SoundWave	139.
Intelligent Music	
OvalTune	95.
Passport Designs	
Master Tracks Pro 3.0	259.
NoteWriter	189.
Passport MIDI Interface	95.
Prima Software	
Different Drummer	59.
Resonate	
Listen 2.0	62.

Arkanoid (Discovery Software)

Arkanoid is an explosive arcade thriller that tests your reflexes and challenges your split-second decision making skills. Arkanoid hurls you into the icy reaches of outer space and requires you to battle the whirling Koners, Pyradoks and Tri-spheres that block your path of survival. As you advance through each level you must destroy the hypnotizing brick formations while you guide the Vaus to deflect the rebounding energy ball and catch the special power capsules. (entertainment) \$26. \$33.33



NETWORKING PRODUCTS

Connect Inc.	
MacNet	43.
Farallon	
Timbuktu 2.0.1	65.
Timbuktu Remote 1.0.1	195.
TraficWatch	135.
PhoneNET PLUS	35.
PhoneNET Repeater	325.
PhoneNet Star Controller	1095.
Punch Down Block Tool	9.
Shiva	
NetBridge	349.
NetSerial X232	279.
TOPS	
NetPrint	119.
FlashBox	125.
FlashCard	159.
Repeater	129.
Teleconnectors	29.
TOPS 2.1	145.
TOPS DOS	115.

Checkwriter (Aatrix)

Enter recurring transactions and it reminds you to write checks and enter deposits. Print your own ledgers, debits/credits and tax sheltered transactions. Unlimited number of checking accounts and transactions per account. Lets you design your own check and stub, and will write them too! \$37.

Payroll Plus
Made for larger companies; will handle many employees, plus special accounting for restaurants, contractors, and commissioned sales people. Can manage payroll from up to 10 income sources. Prints checks, itemizes, accumulates O/T and can prorate sick / vacation pay. (finance) \$155.



SECURITY AND VIRUS PROTECTION

ASD Software, Inc.	
FileGuard	129.
HJC Software, Inc.	
Virex	59.
Kent Marsh	
MacSafe	87.
NightWatch	
MacSafe	87.
Mainstay	
AntiToxin	65.
Symantec Corporation	
S. A. M.	69.

SPELLING/DICTIONARY THESAURUS CHECKERS

Aegis Development, Inc.	
Doug Clapp's Word Tools	42.
Deneba Software	
BigThesaurus	59.
Spelling Coach Pro	115.
Electronic Arts	
Thunder II	52.

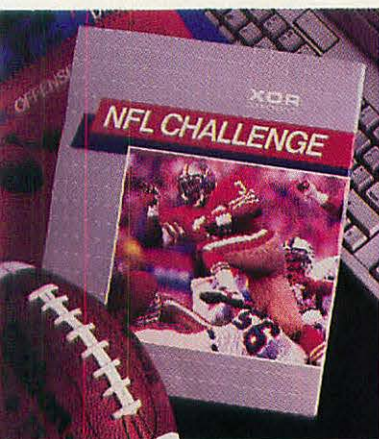
Casino Master (Centron)

Become a Master of Casino Gambling! Five separate casino games include **Blackjack Ace**, **Crapsmaster**, **Roulette Master**, **Pokermaster**, and **Baccarat Master**. Exact table simulation, betting, bankroll, stored win/lose statistics and manual included. Now in dazzling color on the Mac III! Recommended and used by professional gamblers! (entertainment) \$27. each game or 5 game Casino Master Package for \$49. or Deluxe Mac II color version for \$55.



CompuServe™

You can now contact MacWAREHOUSE or place orders with us in the **Electronic Mall** on CompuServe. The **MacWAREHOUSE GO code** is **GO MW**. As always, you'll get fast, dependable overnight service and you can leave messages for Kerry or any of our support staff.



NFL Challenge (XOR Corp.)

Make a touchdown with the most realistic football simulation available! The user is provided with a complete player rosters and skill level ratings on every player on all 28 NFL teams. The simulation features over 60 offensive and defensive plays, game clocks, slow motion instant replays, graphic animation and more! It can be played against the computer, another human coach, or straight computer vs. computer simulation. Officially Licensed by the National Football League. (entertainment) \$54.

Microlytics

Electronic Word Finder 75.
Word Finder 2.0 36.

Sensible Software

BookEnds or Sensible Grammar 53.

STATISTICAL ANALYSIS

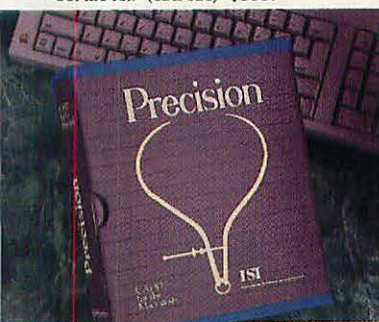
Abacus Concepts
StatView II 295.
StatView SE+Graphics 225.
BrainPower
StatView 512+ (requires 512k) 149.
D2 Software
MacSpin 2.0 189.
Odesta
Data Desk Professional 289.
Paracomp
Milo 159.
Select Micro Systems, Inc.
Exstatix 219.
Wolfram Research
Mathematica (SE) 450.

UTILITIES

Abbott Systems
CanOpener 65.
Affinity
Tempo II 79.

Precision (I.S.I.)

Precision is a high performance 2-1/2D CADD solution for the Macintosh. This full featured package offers extensive drawing and editing features such as global replace symbols, in-depth analysis, powerful macro files and complete dimensioning capabilities. Precision at no extra charge includes complete range of plotter drivers, import/export utilities for DXF and IGES files, 800 phone support and over 1000 architectural and mechanical symbol file kit. (cad/cae) \$399.



ALSoft

DiskExpress 49.
Font/DA Juggler 42.
MasterDisk 49.
Master Juggler 64.

Berkeley System Design, Inc.

Stepping Out II 52.

CE Software

DiskTop 3.0.2 32.

QuickKeys 1.2 65.

Caere

OmniPage 559.

Central Point Software

Copy II Mac (with MacTools) 24.

PC Tools Deluxe For Mac 46.

Emerald City Software

Lasertalk 1.0 187.

Fifth Generation

FastBack II 108.

PowerStation 2.5 35.

Pyro 15.

Suitcase II 45.

GO Technologies

MacTree Plus 46.

ICOM Simulations

On Cue 35.

Insight Development

MacPrint 79.

LaCie Ltd.

SilverServer 89.

Magic Software

AutoSave II 29.

POWERICONS 39.

POWERmenus 39.

Mainstay

Capture 42.

TypeNow 27.

Microlytics

GOfer 47.

Olduvai

MultiClip 55.

PCPC

HFS Backup 3.0 54.

Peripheral Land, Inc.

TurboBack 49.

TurboCache or Turbo Spool ea. 59.

TurboOptimizer 25.

SuperMac

DiskFit 1.5 or SuperSpool 5.0 ea. 59.

Sentinel 2.0 89.

SuperLaserSpool 2.0 89.

Symantec Corporation

Symantec Utilities for Macintosh 65.

Tactic Software

ClipShare 139.

FontShare 149.

Williams & Macias

DiskFinder 29.

myDiskLabeler 34.

StickyBusiness 95.

XTree Company

XTree Mac 58.

WORD PROCESSORS AND OUTLINERS

DeltaPoint, Inc.

MindWrite 2.1 95.

Ashton-Tate

FullWrite Professional 259.

Claris

MacWrite II 185.

Microsoft

Word 4 249.

Niles & Associates

End Note 75.

Symmetry

Acta Advantage w/DA 65.

T/Maker

WriteNow 2.0 119.

WordPerfect Corp.

WordPerfect 185.

Working Software

QuickLetter 73.

CONTEST RULES 1. Entries must be received on or before 1/31/90. 2. Winners selected in random drawings by attorneys for MicroWarehouse Inc. (MWH), whose decisions are final. 3. Next Computer prize subject to availability. MWH reserves the right to substitute wholesale cash value up to \$10,000. 4. Winners responsible for taxes. 5. Odds of winning depend on number of entries. All prizes will be awarded. 6. MWH will announce the winners on or around 2/28/90. Winners notified by mail. Dates subject to change at the discretion of MWH. If unable to contact any winner, an alternate will be selected by random drawing. 7. Contest is open to US residents, except where prohibited by law. Employees of MWH and suppliers not eligible. 8. Prizes - one Next Computer including keyboard and monitor and 150 software and media prizes.

Circle 78 on reader service card

STOP PRESS



800K Drive

The Cutting Edge 800K drive's attractive styling, quiet performance, and high-tech reliability make it our most popular floppy drive. Features an LED light to indicate disk access and a hinged door over the disk insertion slot to keep the mechanism clean. One year manufacturers warranty. (disk drives) \$149.

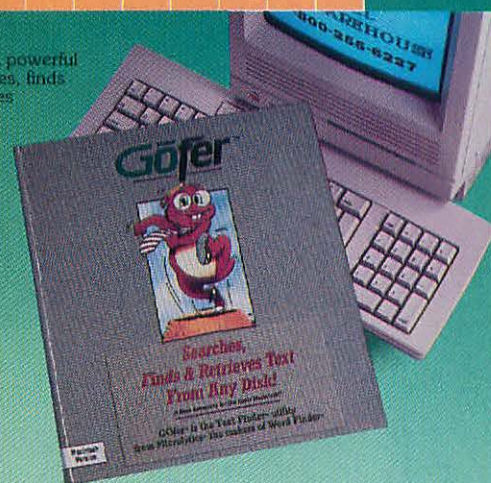
NEW! Price breakthrough! Under the Mac Drives (Cutting Edge)

The Cutting Edge Under the Mac Drive hard disk drives are quiet and reliable with access times down to 20 milliseconds making it almost three times faster than most. Push button external SCSI address switch and removable SCSI terminators allow easy daisy chaining up to 7 SCSI devices. Sizes available 20 megs to 80 megs (disk drives) 20 meg only \$439. 30+ meg only \$499. 45+ meg only \$549. 65+ meg only \$629. 80+ meg only \$739.



GOfer (Microlytics)

The ultimate text finder. A powerful software utility that searches, finds and retrieves text. Searches through countless files on your hard disk drive or floppy disks to find the text you need. A phrase, a fact, a note, a date. If you need it, GOfer finds it in seconds. You can automatically import the section of text into the document you're currently working in. You save hours searching through files. GOfer operates as a Macintosh desk accessory. (utilities) \$47.



I'm Donna, call me at:

MacWAREHOUSE™
1-800-255-6227

(1-800-ALL MACS)

Inquiries: 201-367-0440

Canada: 800-255-6447

FAX # 201-905-9279

MONDAY THRU FRIDAY

8 A.M. TO 11 P.M. (Eastern Time)

SATURDAY

8 A.M. TO 8 P.M. (Eastern Time)

OPEN SUNDAYS!

8 A.M. TO 8 P.M. (Eastern Time)



Hard Bargain.

The easy decision has already been made: you're going to buy a hard disk drive. The more difficult question is which drive to buy.

Ehman would like to help make your decision easier by giving you an unbeatable bargain on a 30MB Hard Drive. The best hard bargain in the industry. Just \$449 gives

you Seagate technology and reliability, (the same drive that Apple uses), Ehman's reputation for quality and an obsession with efficiency and service.

And now that we're bundling our hard drives with "PC Tools Macintosh", you'll have all the utilities

PC Tools not included with 20MB drives

you need to maximize your efficiency on the Mac. After all, you bought a Macintosh computer to help make you more efficient.

Ehman now helps you do it for less. Ehman has been

a leading manufacturer of quality Macintosh peripherals since 1985, giving us advanced technical design skills, manufacturing expertise, and back-up service from skilled personnel.

That's a combination that's pretty hard to beat. But if you're still unconvinced that this is the best bargain you'll ever find on a hard drive, we'll give you 30 days to make up your mind. Purchase the drive, try it for 30 days and see if it isn't everything you've always wanted in a hard drive. If

 **Seagate**


it isn't you can return it to us with no questions asked. Add to that a two-year limited warranty and you've got an offer that's hard to pass up.

So don't. Call 1-800-257-1666, U.S., or 1-307-789-3830 Worldwide, from 9 a.m. to 9 p.m.

EST Monday-Saturday. Overnight delivery via Federal Express. Visa, Mastercard, and American Express welcome.



This is a very simple and easy to understand guarantee. If, for any reason, you are not satisfied

with the performance of an Ehman Hard Drive, return it to us. We'll either refund your money, 100%, or we'll replace it. That's it. No other conditions or exceptions. We just want you to be satisfied. We're not interested in fine print, just a fine product. We gladly guarantee yours. 

HARD DRIVE PRICES

Size (Mb)	Internal	External
20	\$329	\$399
30 +	\$379	\$449
45	\$449	\$529
60 +	\$499*	\$579
80 +	\$599*	\$679
45MB Removable Drive	\$849	

 **Ehman**

1-800-257-1666


 **Ehman**



MACWORLD NEWS

by Dan Littman and
Tom Moran

Color PostScript Output for Under \$10,000

 QMS has begun shipping the first 300-dpi printer listing for less than \$10,000 that uses Adobe PostScript. The ColorScript 100 Model 10 is also the first printer to use Mitsubishi's new G370 thermal-transfer print engine, which can produce up to 16.7 million colors. You can choose an all-black ribbon, a three-color ribbon (with cyan, magenta, and yellow), or a four-color ribbon (with cyan, magenta, yellow, and black). A typical page prints in about 15 seconds, using the black ribbon; with the three-color ribbon, it takes less than a minute; with the four-color ribbon, about 70 seconds. The printer accepts cut-sheet paper and transparencies.

The printer's controller includes a 16MHz 68020, 4MB of RAM, 1MB of ROM, and 35 resident typefaces. With that amount of RAM, the ColorScript 100 Model 10 can produce letter or A4-size output. The 1MB and 4MB memory options support legal-size output and additional virtual memory for downloadable fonts and for special imaging



The QMS ColorScript 100 Model 10, the first 300-dpi PostScript printer to cost under \$10,000, is a thermal-transfer device.

on the larger output sizes. QMS is also offering an HP-Graphics Language plotter-language emulation for \$199.

The QMS ColorScript 100 Model 10 lists for \$9995. The memory expansions list for \$595 for 1MB and \$1495 for 4MB. For more information, call QMS in Mobile, Alabama, at 800/631-2692.

—Tom Moran

More Best-Laid Plans



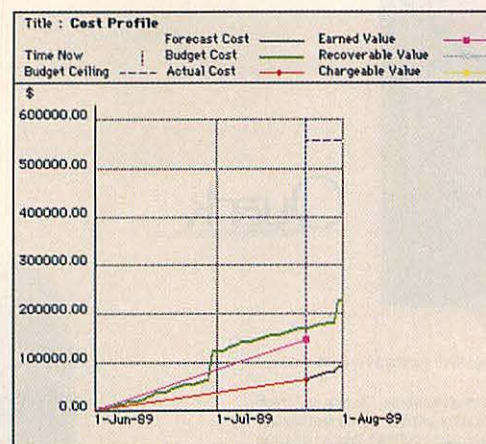
When Micro Planning International began marketing project-management software for the Apple II in 1980, the company was already established

as a project-management consulting firm. It continued consulting and developing software, later releasing MicroPlanner for the Macintosh. Now the company is preparing a \$1995 package,

called Micro Planner X-Pert, which adds the ability to manage concurrent projects with shared resources.

X-Pert can share data across a network, and is designed to compile and analyze data fed in by multiple project or subproject managers who use the standard version of MicroPlanner. X-Pert can handle 10,000 tasks and 200 resource categories, and it allows data entry and display in several formats, including precedence, arrow, and table formats. It performs earned-value analysis to show how a project's progress compares with its cash flow. It provides four kinds of resource leveling, the results of which can be compared: earliest start, latest start, deadline critical, and resource critical. Micro Planner X-Pert has an enhanced report-designing environment and incorporates

(continues)



Among the many charts and graphs Micro Planner X-Pert generates is this one showing a project's earned value analysis.

Unique.

Suddenly, everyone's a publisher. Your reader has stacks of newsletters, reports and publications that will go unread. You need to be sure that every publication you create works as hard as you do to get your message through.

You need a new tool that can create unique and effective publications, within budget and on time. One that doesn't require a Ph.D. to operate.

QuarkXPress® 2.1 is fast, powerful page design software created specifically for graphic designers. With commercial-quality typography, professional color support, and integrated word processing, QuarkXPress blends simplicity and productivity into a potent, unique design tool. Designers wouldn't have it any other way.

MacUser magazine calls QuarkXPress "the most powerful page layout package for the Macintosh."

Let the unique power of QuarkXPress give you new creative options and a business advantage.

800-356-9363

Ask for Department A.



Quark™

Quark and QuarkXPress are registered trademarks of Quark, Inc.

PANTONE® is a registered trademark of Pantone, Inc. *Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials. Process color reproduction may not match PANTONE®-identified solid color standards. Refer to current PANTONE Color Publications for the accurate color.

Quark, Inc. • 300 South Jackson, Suite 100 • Denver, Colorado 80209

Circle 295 on reader service card





the functions of the Project Exchange application for mainframe and minicomputer data interchange; an A/UX version is available now and a Microsoft Windows version is in the works that will provide transparent file-sharing between Macs and computers running Windows.

Micro Planner X-Pert runs on a Mac Plus but is optimized for the Mac II series. For more information, call Micro Planning International in San Francisco at 415/788-3324.

—Dan Littman

Saving the Rain Forest on Laser Disk



In a remote laboratory in Southern California's San Jacinto Mountains, an ambitious hypermedia project is taking shape. Michael Hamilton, director of the James San Jacinto Mountains Reserve and an assistant professor of biology at the University of California at Riverside, has long been interested in using computers in the field of ecology. With the help of Apple's Interactive Video Toolkit, he has created a HyperCard interface for his project: the Macroscopic Ecology Laserdisc.

So far, the disk contains about 25,000 images, many of them pictures or films of flora and fauna found in the James Reserve, a biological field station operated by the University of California. The stack offers information on the items pictured, as well as references to books and articles.

"The challenge was to create a generic interface to enter the database, then



Michael Hamilton looks to the future of the world environment with his Macroscopic Ecology Laserdisc.

provide specialized information for different types of users," says Hamilton. For example, a biologist might be interested in how many of a particular species of plant are found in a given area, while a fire fighter would need to know how flammable the vegetation in that area was under certain wind conditions. Hamilton's interactive videodisk can accommodate both of these users, among others.

At the University's urging, Hamilton is expanding the videodisk so it can also function as a general-purpose tool for teaching ecology. This year, he's heading for Venezuela with what he calls a portable multimedia-development workstation: a video camera for motion footage; a still-video camera for single frames; and a Mac Plus with a 40MB hard disk,

HyperCard, MacRecorder, and MacGIS, a mapping program developed at the University of Oregon. With this arsenal he can photograph live plants and animals in their native habitat, key the location to a map, record animal sounds, and index the entry in HyperCard. Hamilton expects to record 3000 images in various ecosystems in Venezuela, from tropical forests to the Andes. Hamilton's recording technique will give researchers a more complete picture than they'd get from jars full of specimens. In the rapidly disappearing tropical forests, he points out, "the more information we can capture using multimedia techniques, the better off we'll be."

For more information on the Macroscopic Ecology Laserdisc project, contact Michael Hamilton at the

James San Jacinto Mountains Reserve, P.O. Box 1775, Idyllwild, California 92349; 714/659-3811.

—Erfert Fenton

Hey, Mac, Call Your Office



You're cruising along the freeway heading for a weekend getaway, when suddenly you realize you forgot to fax a memo that's still on your desk at the office. So you pick up your car phone and dial your Mac. Over the phone you ask it to retrieve a copy of the document from your database and fax it to your client. The Mac responds using either MacinTalk or a digitized voice system. By the time you hang up the phone, the facsimile is on its way and so are you.

All this may sound pretty futuristic, but the technology is already here. Articulate Systems, whose existing Voice Navigator lets you operate the Macintosh through spoken commands, went a quantum leap further when they recently introduced a telecommunications version of the product.

The new product, internally code-named Executive Server, has 2400-baud modem and Group 3 facsimile capabilities. The system uses the same external 9-by-9-inch SCSI box as the Voice Navigator. The speaker-dependent speech driver software recognizes up to 200 or 1000 discrete utterances, depending on the model. Although the program comes bundled with word lists for 20 commonly used programs, it can be trained to work with any Mac (continues)

How to Find *User Friendly* Training For the Macintosh Computer

Universities, Major Corporations, Government Agencies, School Districts, and Small Businesses Find A Low-Cost Macintosh Training Solution

by Randall D. Smith

"I just can't find quality, low cost training for the Macintosh computer. I don't have the time, nor the money to waste on training gimmicks."

I must admit I felt the same way when I bought my Macintosh computer. I was like a lot of first time owners who simply popped in the disks and figured out the basics on my own. After having used an IBM for three years I was thrilled to be able to accomplish the Mac basics without taking a six month course!

Over the next few months I happily used my Mac for letters, simple spreadsheets, check books, a few graphics, and for games. But as a business owner, way in the back of my mind, I knew that there was a great deal more the computer and the software could do if they just had someone else behind the mouse.

I realized I needed *training* to get the most out of my computer. I first tried reading the manuals. At some point in school they convinced me that I'm a fairly bright fellow. But after nights of reading manuals I just didn't understand what I was reading.

My next step was to visit my local Apple dealer for help. He was friendly enough, but made it clear that his interest was in *selling* computers, not *teaching* me how to use them. He did mention however, that there was some training available at \$75 per hour. I had already paid for one college education and didn't really have the budget for another!

My last resort was a Mac user group. These were great people

who were extremely bright and could quote the electrical diagram of the Mac backwards and forwards. But the group was too advanced for me. I was stuck!

I guess I wasn't the first person to find themselves in this situation. Right now there are literally thousands of companies buying Macs for employees who don't know the first thing about advanced applications.

MacAcademy was created to fill the training gap. This specialized Macintosh training course was designed to give Mac users a "jump-start" on the most popular business courses.

"those who have worked with the Macintosh for a while can learn to use their applications better and gain Macintosh skills from MacAcademy's program."

MacWEEK July 25, 1989

MacAcademy boasts many unique features: **Instructors:** Instead of sales people or programmers we feature only top business executives who use the Mac daily in their businesses. **Format:** Two full days of instruction on the Mac, Excel, Word, FileMaker, PageMaker, and HyperCard. **Schedule:** Attendees can design their own personalized schedule by choosing between 18 different, 2 hour workshops. **Price:** While others charge up to \$1200 for workshops, we offer two full days for only \$249. **Location:** MacAcademy is held in top hotels in business centers across the U.S. **Emphasis:** MacAcademy places training emphasis on techniques and *business* applications of the

featured software.

The Results. Over 20,000 people have recently attended MacAcademy. On a scale of 1 to 5 they have given the experience a 4.6. Companies who have attended include GE, Kodak, GTE, MIT, Honeywell, NASA, Boeing, Citicorp, Kinko's Graphics, Mobil Oil, Gillette, TRW and over 1,000 additional corporations.

"MacAcademy Macintosh crash course gets and A+."

Texas HiTech Review June 1989

MacAcademy Workshop Schedule

September

New York City
Philadelphia
Washington D.C.
Boston
Hartford
Baltimore

October

San Francisco
Sacramento
San Jose
Anaheim
Los Angeles
San Diego

November

Chicago
Indianapolis
Pittsburgh
Cincinnati
Memphis
Nashville

December

Orlando
Miami
Tampa

For More Information Call:
904-677-1918 or FAX 904-677-6717.
MacAcademy 477 S. Nova Rd.
Ormond Beach, FL 32174.

©1989 Florida Marketing International, Inc.

application. And you train the system to recognize your voice or a group of voices by creating a voice-options file.

The Voice Navigator model that recognizes up to 200 commands lists for \$1295; the 1000-command model lists for \$1795. An under-\$2000 Executive Server telecommunications version should begin shipping in the fourth quarter. For more information, call Articulate Systems in Cambridge, Massachusetts, at 617/876-5236.

— Mary Margaret Lewis

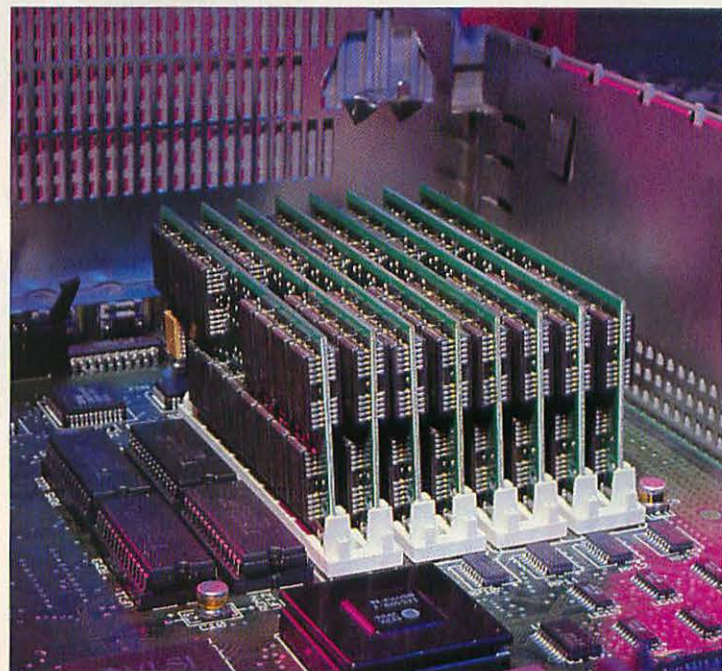
Government Style

Software for publishing highly technical material such as documentation for Trident submarines and B-1 bombers is coming soon to a Mac near you.

Starting in 1990, the United States Department of Defense will phase in requirements for defense contractors to provide all completed weapons systems with documentation that meets CALS

(Computer-Aided Acquisition and Logistics Support) standards, and Agfa Compugraphic has already developed a document-production system for the Mac that implements Standard Graphics Markup Language (SGML), the text-management subset of CALS. Other government agencies will follow the DOD's lead over the next few years, and most industries developing technical documentation on the Macintosh (or on any other platform) will be forced to adopt the CALS standard.

As Agfa describes it, SGML "separates the structure of a document from its style of presentation." It can be thought of as a complex set of style sheets, but instead of describing what a document looks like, it describes what each part of a document is: table of contents, chapter titles, subheads, illustration captions, mathematical equations, page or column margins, and so on. This generic labeling simplifies the process of integrating parts of a documentation set submit-



Multi-Inline Memory Modules from PSI let you pack up to 32MB of RAM into a Mac II, IIx, or IIcx.

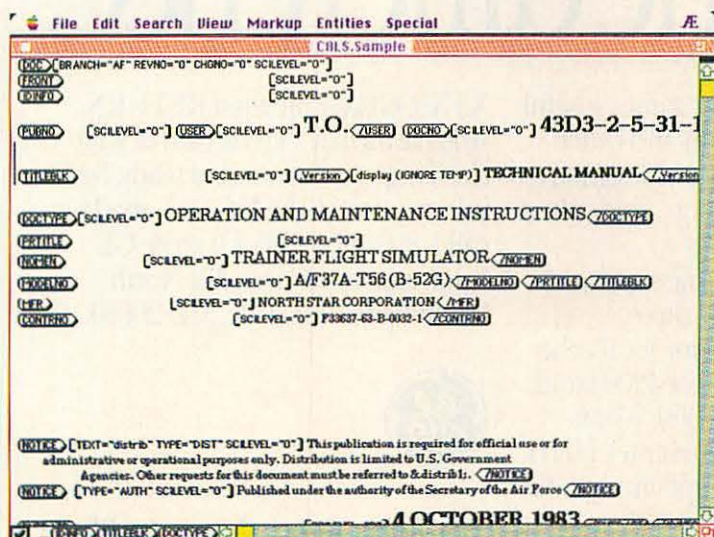
ted by subcontractors who use incompatible computer systems, as well as the process of searching and updating documentation sets that may run to tens or even hundreds of thousands of pages. Page design for online and paper documentation can be generated independently.

Agfa Compugraphic is calling its interpretation of SGML for the Macintosh CAPS (Compugraphic Automated Publishing System) Author/Editor. CAPS Author/Editor is available either bundled with Macs or separately; a server-based central publishing system using a Sun/3 workstation is required for merging Mac-produced documents, and the Sun software is also available separately or bundled with a Sun workstation. Prices depend on configuration. For more information, contact Nancy Bertsch at Agfa Compugraphic, 508/658-5600, ext. 5253.—D.L.

Packing Lots of Memory in a Small Space

For those who'd like to go beyond the 8MB memory barrier on the Mac II, IIx, or IIcx, Pinnacle Sales International (PSI) has begun shipping a 4MB memory expansion that fits into a standard SIMM socket. Called the Multi-Inline Memory Module, or MIMM, the memory strip has 2MB of RAM on each side.

After inserting four MIMMs into the Mac, a user would have 17MB of memory to play with, or 32MB with eight MIMMs installed. However, at a suggested list price of \$8500 for four MIMMs (about \$530 per megabyte), they are likely to appeal most to users with memory-hogging applications such as high-end CAD, full-motion video, and software development. Discounts are (continues)



Tags in this CALS-compliant document describe parts of the document; formatting can later be assigned to each part.

GE Information Services GE nie™		
A summary of your monthly charges:		
Description	Time	Cost
■ Download 3 Files	1:00	6.00
■ Read messages on 2 bulletin boards	0:15	1.50
■ Check 10 stock quotes	0:05	.92
■ Read today's news	0:10	1.00
■ Play Stellar Emperor	0:30	3.00
Total hrs. non-prime/1200 baud	2:00	
Total Cost		\$12.42

CompuServe® Monthly Summary		
A summary of your monthly charges:		
Item	Hours	Cost
-Download 3 Files	1:00	12.50
-Read messages on 2 bulletin boards	0:15	3.13
-Check 10 stock quotes	0:05	1.24*
-Read today's news	0:10	2.08
-Play MegaWars III	0:30	6.25
Total hrs. non-prime/1200 baud	2:00	
Total Cost		\$25.70
Network surcharge \$.50 *\$.02/quote surcharge non-prime		

It doesn't take a computer to figure out the difference.

The difference between the GEnie™ service and CompuServe® could make a big difference to you. Here's why. GEnie's rate for 1200 baud access is just \$6 per non-prime hour*. There's more than twice as much. Which means that with GEnie you can stay online longer for a whole lot less.

And that means more time to enjoy more of GEnie's services. Like valuable computer RoundTables.

Exciting multi-player games. Useful financial information and much more. All at hourly rates designed to allow you to spend more time online. Not more money.

And with GEnie signing up is as easy as one, two, three.

- (1) Set your modem for local echo (half duplex), 300 or 1200 baud.
- (2) Dial 1-800-638-8369. When connected, you just enter HHH.
- (3) At the U#= prompt simply enter

XTX99633,GEnie then RETURN. And have a major credit card or your checking account number ready. For information in the U.S. or Canada, call 1-800-638-9636. Or write GE Information Services, 401 North Washington, Rockville, MD 20850.



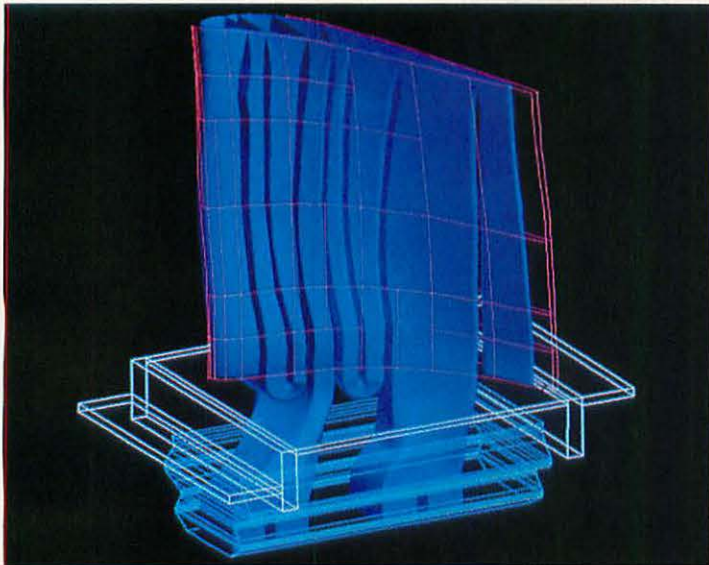
We bring good things to life.

*Applies only in U.S. Mon.-Fri. 6PM-8AM local time and all day Sat., Sun., and national holidays. Subject to service availability. Some services may be subject to a surcharge. Prices effective May 1, 1989.

Circle 359 on reader service card

available for universities.

Because the Mac II series is not currently equipped to address more than 8MB, PSI includes its own RAM disk software, which lets the computer treat the extra RAM as an extremely fast hard disk. When Apple ships System 7.0, ROM upgrades should be available that will let the Mac II family directly address much more than 32MB of RAM. For more information, call PSI in San Jose, California, at 408/559-8544.—T.M.



The Symbolics-based software used to design this jet engine part incorporates the engineers' knowledge to speed up design.

But Does It Do Symbols?

Symbolics, with its line of dedicated AI machines and software, was one of the first companies to provide computers for artificial intelligence. Now it is branching out with MacIvory Model 2, a \$16,000 set of two NuBus boards for the Mac II that effectively puts a Symbolics workstation, with a custom symbolic-processing chip

running Symbolics' LISP, in a window as a MultiFinder partition.

Symbolic processing provides programmers with a bigger and more sophisticated vocabulary, letting them work with symbols and objects in addition to numbers and characters. According to a Symbolics spokesperson, it's analogous to the difference between explaining something to a five-year-old, who needs definitions for basic concepts, and explaining it to

a set of rules. As the design specs change, the ICAD System user adjusts the rules, which automatically updates the drawings. ICAD's vice president of development Avram Belzer explains, "In ICAD, the design process itself is being entered into the computer. You can put in all sorts of constraints. They don't have to be geometric—they could be manufacturing constraints or customer requirements."

The ICAD System runs on Symbolics' dedicated workstations and on a MacIvory Model 2-equipped Mac II; engineers using the Mac II-based system can click back into a Mac window to use PageMaker or AutoCAD at any time.

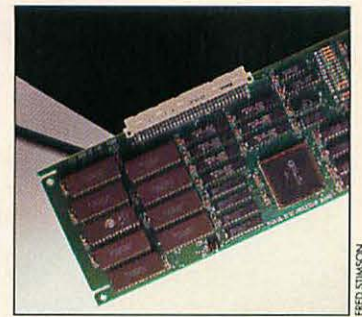
For details about MacIvory Model 2 and complementary software, contact Symbolics in Burlington, Massachusetts, at 617/221-1000. For information about ICAD's engineering software, contact the company in Cambridge, Massachusetts, at 617/868-2800.

—Nancy E. Dunn

Accelerating 24-bit Color



A 24-bit color accelerator based on a RISC microprocessor has been announced by Mac display pioneer Radius. The accelerator, a NuBus board called the Radius QuickColor Graphics Accelerator, works in conjunction with the company's DirectColor and GSC color display boards. QuickColor can take advantage of the bus-master capability of either display board, resulting in block-mode transfer rates of up to



Radius's RISC-based 24-bit color accelerator.

27MB per second between NuBus boards.

The accelerator uses an Acorn RISC processor with 6 MIPS of processing power to speed up graphics routines and free the Mac's CPU for other tasks. Pattern fills are up to 20 times faster, with an overall improvement in graphics speed of about 5 to 10 times depending on the application, according to Radius. The accelerator also speeds up text scrolling, image displays, and window movement. It allows the few existing 32-bit QuickDraw applications to run without modification.

QuickColor is the first in a family of Radius boards that will add capabilities in areas such as CAD, video, and multimedia. The company scheduled QuickColor to ship in July. Its suggested list price is \$795. For more information, contact Radius in San Jose, California, at 408/434-1010.—T.M.

Cool, Clear Water



The Reliable Water Company wants desert and island communities to be able to take fresh drinking water for granted—with the help of its (continues)

Before Adding MacIRMA To Your Workstation Communications File, Remember That Necessity Isn't The Only Mother Of Invention.



We invented IRMA™ to connect IBM® PCs and compatibles to mainframes. But when Macintoshes® arrived, our invention had to be reinvented. So out of IRMA technology, MacIRMA™ was born. With complete terminal emulation and file transfer functions. Plus IBM mainframe graphics and industry standard APIs. **DCA®**. All of which should make it a necessity to add this to your DCA® file.

PC WEEK

DCA Enhances Mac-to-Mainframe Offering

New MacIRMA Emulation Board Includes Background File Transfer

By Tara Sexton

Digital Communications Associates Inc. (DCA) last week expanded its Macintosh-to-mainframe connectivity options with a new version of its MacIRMA 3270 terminal-emulation board.

The MacIRMA 1.2, which is compatible with the Apple Macintosh II, IIx, SE, SE/30 and Macintosh IIfx, announced last week, offers a wide range of new functions, including background file

INFO
WORLD

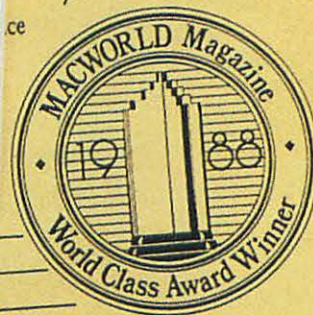
INFO WORLD

READERS' POLL RESULTS

Product of the Year

NETWORK MICRO-
MAINFRAME CONNECTION
Macintosh: DCA MacIRMA

MacIRMA™



Best
Communications
Board

DCA Announces API for Mac Irma Card Users

Robert Snowdon Jones

Digital Communication
Associates (DCA)

PC WEEK

Mac-to-Mainframe Connectivity Using the Mac as a Front-End Processor to an IBM Host

Company's
financial data



MacIRMA board

Accesses
host-based
data and
generates
monthly
financial
reports

Using Digital Communications Associates' MacIRMA board and software, tool kits from DCA and Apple, programmers can create custom applications in which the Mac serves as a front-end processor to an IBM host. An application might, for example, let the Mac automatically collect host-based financial information, produce monthly financial reports. The Mac could access the host, compile it in a graphical format, and automatically send the report to a predetermined list of recipients.

DCA's Mac Irma Graphics permits users to access IBM mainframe graphics applications from the Mac II and Mac SE, cutting and pasting between those applications and Mac programs.

DCA Unveils Graphics Emulation for the Mac

Lets Users Access IBM Mainframe

BY LAURIE FLYNN

Mac users are no longer locked out of IBM mainframe graphics applications after last week's announcement of emulation software from DCA Inc. The program, called Mac Irma Graphics, is used with DCA's Mac Irma card for the

Customer Representative
Marketing Information Group

DCA

1000 Alderman Drive
Alpharetta, GA 30201-4199
1-800-241-4762, Ext. 53
In Georgia 404-442-4500, Ext. 53

MacinStor™ Adds Two New Dimensions To Erasable Optical.



Speed And Capacity.



Its speed is Winchester class. Its capacity breaks the gigabyte barrier. It's MacinStor Erasable Optical.

MacinStor delivers incredible crunch per byte—crunch no other erasable optical subsystem can touch. 35 ms average seek time. 10 Mbits/sec average transfer rate. One gigabyte removable cartridge capacity.

We accomplished all this by building MacinStor around Maxtor's revolutionary Tahiti™ I magneto-optical technology.

MacinStor Erasable Optical joins our extensive line of mass storage solutions—hard disk and optical, internal and external, in capacities from 45 MB to 1 gigabyte. All come with comprehensive software and full hardware features, plug-and-play, right out of the carton.

Get the added value you've been expecting from erasable optical. With the added dimensions only Storage Dimensions can deliver. Call us at (408) 879-0300 for the dealer nearest you.



STORAGE DIMENSIONS

A MAXTOR COMPANY

2145 Hamilton Avenue, San Jose, CA 95125

MacinStor is a trademark of Storage Dimensions. Tahiti is a trademark of Maxtor Corporation. © 1989 Storage Dimensions



Circle 414 on reader service card



Edward Fredkin, inventor of the machine instinct technique that controls desalination plants almost without human intervention.

own Mac-controlled desalination system.

Desalination, the process of making fresh water from sea water, has been around since the 1920s. Unfortunately, the desalination plants that exist today are always susceptible to operator error. What makes Reliable Water's RW-2 Seawater Desalination Plant in the Canary Islands different is its programmed intelligence, courtesy of a technology called machine instinct. The plant doesn't need a full-time operator; in fact, there are no manual valves, gauges, indicator lights, or meters anywhere in the plant. Instead, the plant is run completely by a Macintosh and a process-control software system called Rex. The only human interaction is via a touch screen on the Mac's monitor.

The term *machine instinct* was coined by Edward Fredkin, a professor at the Massachusetts Institute of Technology who is also the founder and chairman of Reliable Water. It refers to complex machines that consider overall system objectives.

In a sense, the concept of machine instinct parallels that of animal instinct. An animal has high-level instincts for eating, avoiding danger, and so on. Traditional expert systems for plant management, on the other hand, are written to perform low-level tasks like opening a valve if the pressure reading becomes too high. Such systems require a human operator to assimilate all information and decide on action.

Rex handles all these but also is programmed to recognize more sophisticated goals, even abstract ones, such as operating efficiency, machine preservation, cost control, human safety, even environmental safety. Based on sensor input, Rex can perform actions ranging from making operating adjustments to scheduling maintenance calls. Rex was written by engineers at Reliable Water using the G2 expert system shell from Gensym Corporation of Cambridge, Massachusetts.

For more information, contact Reliable Water in Billerica, Massachusetts, at 508/670-2300.

—Brita Meng

Schlumberger Giants

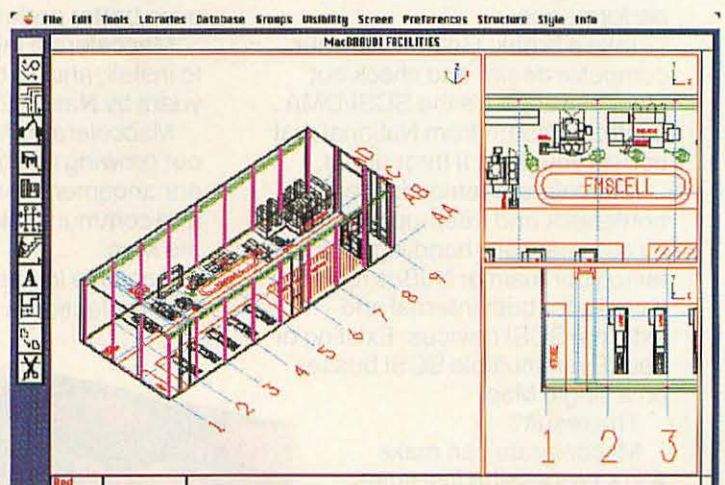
Macintosh CAD has largely been restricted to general-purpose tools for mechanical design and architecture, but VAX CAD developer Schlumberger recently introduced two more modules in its highly specialized MacBravo series: MacBravo Facilities and MacBravo Electronics Designer.

Facilities combines a database and drafting environment to give facilities managers control over laying out floor plans and organizing the resources of a large office, plant, or institution. For example, after entering the shapes and quantities of office wall modules into the Facilities database, you can draft a new floor plan and Facilities will keep track of how many modules you've assigned and how many are still available. On a separate layer, a person sharing the database on a network could string network wiring and then cost it out.

Electronics Designer allows you to set up a waveform simulation and, using a

template editor, format the design for CADAT, SABER, MacBravo SPICE, or another workstation or mainframe package that will actually run the simulation. You can start a design with generic components and later replace them with specific components from libraries of chips made by Motorola, Texas Instruments, and other semiconductor manufacturers. Electronics Designer maintains connections as you substitute chips or move components, and it lets you label components and document your design as you work.

For \$4900 per installation, MacBravo Facilities provides facilities modeling and drafting, an integrated database, and a library of about 1000 components and symbols. IGES compatibility, additional symbol libraries, and a support package are available at extra cost. MacBravo Electronics Designer costs \$1950, and a components library of all major chips and a support package are available at extra cost. Both products can be customized using a built-in programming language called *(continues)*



Schlumberger's MacBravo Facilities makes laying out a workspace somewhat like designing a custom database report.

What happens when Macintosh performance becomes a National priority?



You regain your spare time.
And you gain top-speed Mac II
performance.

Take a break. Go down to your
computer dealer and check out
Maccelerate.[™] It's the SCSI/DMA
controller board from National that
boosts your Mac II throughput.

Maccelerate removes the I/O
bottleneck and frees-up your CPU
by automatically handling data trans-
fer to your main or NuBus memory.
It works for both internal and
external SCSI devices. Existing or
new. Even multiple SCSI busses
on a single Mac.

The result?

Maccelerate can make
A/UX processing five times
faster.

Your Mac OS will perform
at new levels.

And if you're using our NS8/16
memory expansion board, you'll get
even better performance.

Maccelerate takes only minutes
to install, and it's backed for five
years by National.

Maccelerate. A new addition to
our growing line of performance
enhancement, memory, video
and communications products for
the Mac.

Because in case you didn't know,
Mac perfection is a National priority.



Call us or your local National
dealer. It could change the way you
plan your days.

(800) 538-8510

In California (800) 345-4006

Outside U.S. (408) 562-4719

National Semiconductor,
Compatible Products Group,
750 Central Expressway, M/S 34-10,
Santa Clara, CA 95050-2627.

Dealer inquiries welcome.



**National
Semiconductor**

Maccelerate is a trademark of National Semiconductor Corporation. Apple, Mac and Macintosh are registered trademarks, and A/UX is a trademark of Apple Computer. NuBus is a trademark of Texas Instruments, Inc.

Circle 196 on reader service card



Flexible Interface Tool. Facilities and Electronics Designer are expected to ship this fall. For more information, contact Schlumberger in Ann Arbor, Michigan at 313/995-6000.—D.L.

The Visual Almanac



The Visual Almanac, an educational laser disk with a HyperCard interface, was brewed up at Apple's Multimedia Lab as a design example rather than a commercial product. Educators are beta-testing it to see what they can teach with its images, video, sounds, and interactive options. Apple meanwhile is trying to decide whether to go commercial with it.

The Almanac is organized in three parts. First is Collections, a bank of 7500 images and sounds drawn from 50 wide-ranging sources, including the Bettman Archives, the Jet Propulsion Lab, and the California Highway Patrol. The Collections portion includes animals and plants, physics, geography, the solar system, American history, anthropology, daily life in

different cultures, newspaper images, historical portraits, and studies in time.

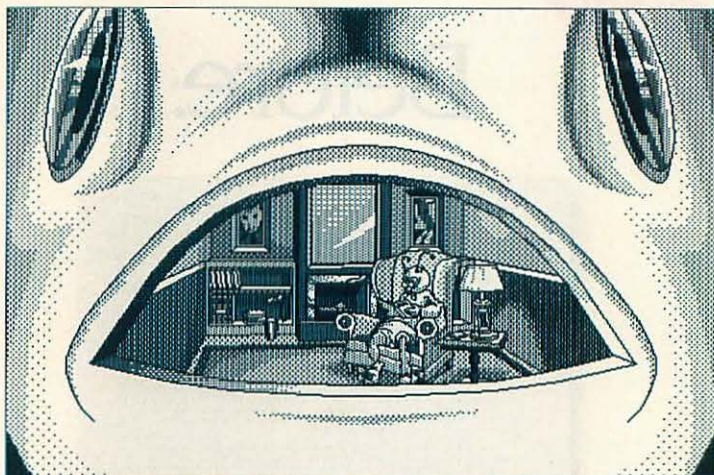
Making up the Almanac's second part is Interactive Activities, which includes such things as Planetary Highway, The Living World, Counting, International Zoo, Orchestra, Historical Atlas, Earth Cycles, and Locomotion. The idea here is that if you can see it, you can understand it. One Playground Physics activity offers live video to help high school students grasp concepts like relative motion and the conservation of angular momentum.

Apple's Multimedia Lab hopes that using the Visual Almanac will help students conceptualize as they visualize and, in the process, develop their skills in abstraction, observation and analysis, and hypothesis testing.

The third part, the Almanac's real centerpiece, is Compositional Workspace. There, searching for material with key words like China, Mars, or Native American, teachers and students can use everything on the disk, as well as their own notes, to create multimedia compositions.



Apple's Visual Almanac provides information for students and teachers to mold into multimedia compositions.



Holy Mackerel! Cosmic Osmo puffs on a pipe in his easy chair just inside the belly of the planet Holy Mackerel.

The Visual Almanac is not as comprehensive as a desk almanac, and it covers too few subjects to be a reference and too many subjects to provide depth. But it's a good lesson in multimedia itself, and it's lots of fun.

—Ann Garrison

For Cosmic Kids (of All Ages)



After Apple spent years trying to convince us that the Mac is no toy, along comes Cosmic Osmo—a HyperCard- and VideoWorks-based adventure that'll make you forget about spreadsheets, outline fonts, and SQL hooks. Not a shoot-'em-up or even a game, Cosmic Osmo provides a universe filled with four very bizarre and amusing planets for you and your kids to explore in a little spaceship.

One planet is an enormous fish floating in space; fly into the mouth and find Osmo sitting in an easy chair, calmly flipping through a book. In his living room, you can sit down at a jam box

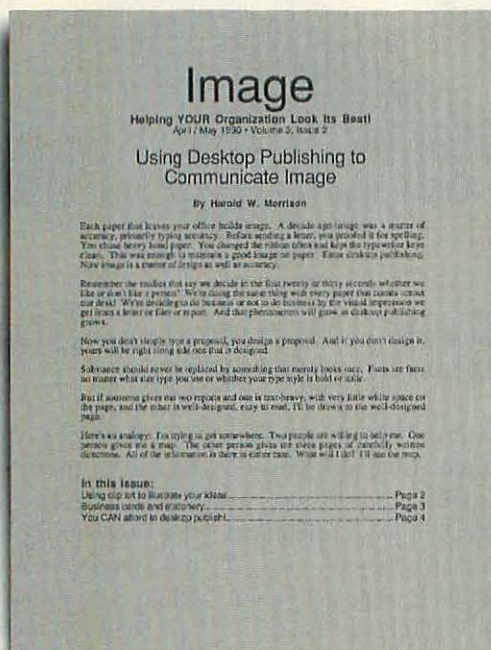
and tape yourself pounding on some drums; later, on another planet, you just may find your opus on a compact disk. Or zoom in and visit the world pasted together from a few sheets of construction paper; once you land, you'll discover it's very three-dimensional, with a mountain off in the distance and doors leading to corridors leading to stairways leading to more doors. Maybe you'll find Osmo studying the universe through his telescope; he'll offer to let you take a peek, and you can also study the charts of his solar system and blueprints of your spaceship.

No menus are available while Osmo is running, so any kid old enough to use a mouse can play unattended and you don't have to worry about your files winding up in the Mac's Trash Can.

Cosmic Osmo is available now on six floppies (it requires a hard disk and HyperCard 1.2.2, which is provided) and lists for \$69.95. A CD ROM version is in the works that will list for about \$70, with double the number of places to explore and music (continues)

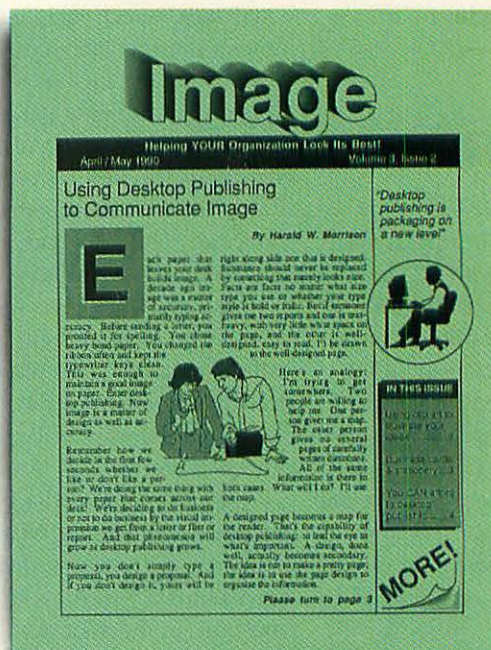
NEW
Macintosh Version
OVER 25 NEW FEATURES

Before.



Your word processor alone.

Soon After.



*Your word processor with
Springboard Publisher II.*

New Springboard Publisher IITM can turn ordinary pages into great looking pages. The same day you buy it!

Extend the power of your word processor.
Springboard Publisher II provides everything you need to turn ordinary pages into impressive, persuasive documents.

It's easy! Start with your word processor file and then add page layout, graphics and special effects. Just point and click to put whatever you want, wherever you want, whenever you want.

EPS, PICT and paint graphics.

All the graphic tools you'll require are built right in...no need to buy extra programs or switch applications. The text tools are there, too, including a spell checker and hyphenation, and a unique typing window for speed.

"If...you need to create snazzier pages than your word processor allows, Springboard Publisher is the package you need!"
Cheryl Spencer
MACWORLD

There's more. Six SmartArt[®] PostScript effects let you rotate text to any degree, add shadow or distance, make text arc or fade, even stretch text as big as your page. And you'll receive 500 pieces of clip art or 36 newsletter templates FREE when you buy—a \$4995 retail value!

Try before you buy. We'll send you a live, hands-on demo disk for just \$995, refundable upon purchase. And remember, all Springboard software is satisfaction guaranteed or your money back. Call **1-800-445-4780, Ext. 6101** and discover how quick and easy great pages can be. **Only \$19995**

SPRINGBOARD


7808 Creekridge Circle • Minneapolis, Minnesota 55435

© Copyright 1989 Springboard Software. Springboard and Springboard Publisher are trademarks of Springboard Software. SmartArt and PostScript are trademarks of Emerald City Software and Adobe Systems, respectively. Program and demo require a 1Mb Macintosh with 800K drive. SmartArt requires a PostScript printer.

Circle 185 on reader service card

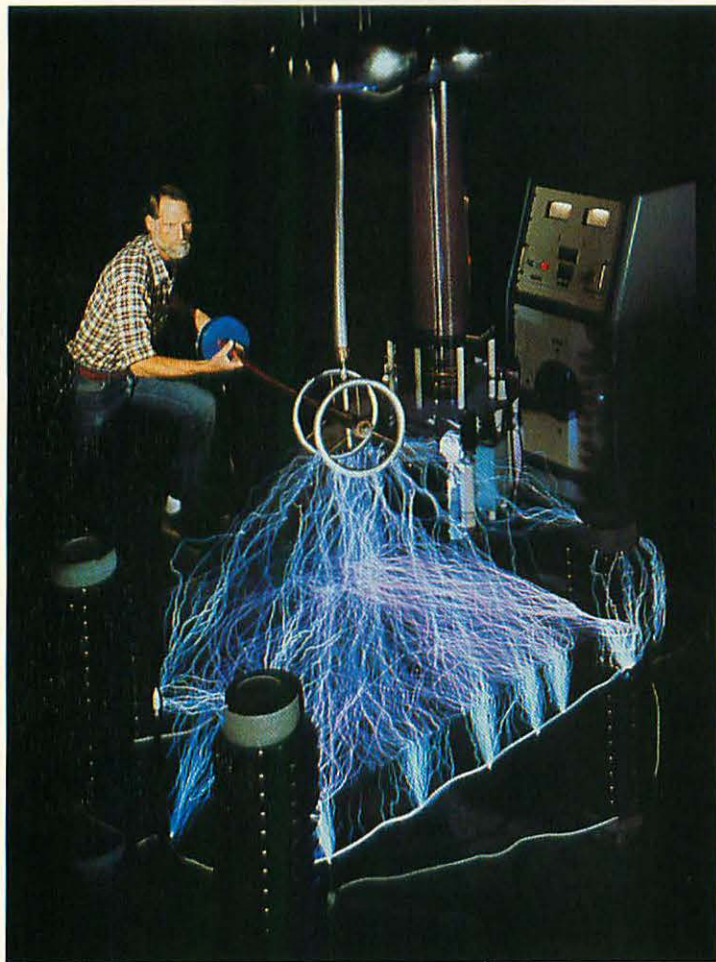
throughout. So don't ask why there's an olive lying next to the telephone, just click on it and... Oh my, did you know that olives can dance? For more information, call Activision in Menlo Park, California, at 415/329-0500.—D.L.

MacPaint Meets Tesla

 Artist Dave Archer gives a new meaning to the term *power user*. In his studio in San Rafael, California, Archer paints with the unlikely combination of MacPaint, acrylics, lacquer, and a 1.5 million-volt tesla coil.

Twenty years ago, Archer discovered he could create swirling patterns by daubing paint on a pane of glass and zapping it with bolts of electricity from a tesla coil (if you've seen *Bride of Frankenstein*, you've seen a tesla coil). Over the years, Archer's abstract paintings evolved into spacescapes, with the tesla-coil-generated patterns forming galaxies and nebulas, complemented by hand-painted stars and planets.

Last year, Archer began to experiment with MacPaint, which he used on his 512K Mac to draw a series of robots. To incorporate a robot



Just another day at the electric easel for Dave Archer, whose "paintbrush" draws 1.5 million volts of power.

into one of his paintings, he prints the robot on his ImageWriter, enlarges the image with a photocopier, then has a silk screen made, and transfers the graphic to the pane of glass.

Although he has tried other graphics programs, Archer is content with

MacPaint, viewing its jagged pixels as an asset. When drawing the intricate robots, he makes use of MacPaint's ability to zip in and out of FatBits. "I look at the Mac as simply another artist's tool," says Archer. "If I paint with a brush, I want that quality to show; if I paint with a computer, I want the image to look like it was created on a computer."

Archer recently purchased a Mac II, and is now experimenting with MacDraw and Claris CAD. So it looks as if the Macintosh will continue to be one of Dave Archer's graphics tools as his work continues to evolve.

—Erfert Fenton

One of Archer's latest works, *Call to Adventure*. Spacescapes and robots are his favorite themes.



Flicker-Free Color for the SE/30



E-Machines has introduced the TX SE/30, a high-resolution color display subsystem for the Mac SE/30. The TX SE/30 includes a 16-inch monitor based on a Sony Trinitron tube, with 1024-by-808-pixel resolution and 72Hz refresh rate. The high resolution lets you see more lines of text or more of an image at once, and the refresh rate reduces flicker even more than display subsystems that refresh the screen at 60Hz.

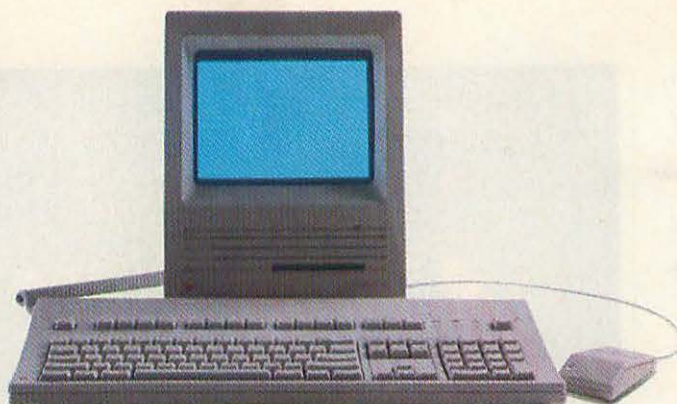
The subsystem's controller shows up to 256 colors and also supports 1-, 2-, 4-, and 8-bit display modes in color and gray scale. Brightness, contrast, and magnification can be set using the included Control Panel software. The controller board has a programmable video palette, a 32-bit data path, and 1MB of video RAM for high-speed operation.

The TX SE/30 retails for \$4495, including monitor and controller board. It was scheduled to begin shipping in August. For more information, call E-Machines in Beaverton, Oregon, at 503/646-6699.—T.M.

Have Mac, Will Travel



NexSys Electronics showed the first production model of its Travel Mac portable at MacWorld Expo in August. The Travel Mac is essentially a chassis that you combine with the system board, floppy disk (continues)



Don't Be A One-Mac Band.

The largest group of Mac® users in the world shares its problems and solutions online every day in CompuServe's Mac Forums. And you can join them.

Find out which Mac software lives up to its claims, which hard drive is best for your applications, how to use the new and exciting HyperCard. Get support from Mac software authors and hardware vendors.

Struggling with a complicated desktop publishing program? Ask someone who's been through it all. Can't make your word processing software work with

PixelPaint? Visit a CompuServe Mac Forum and get the answers. There's no better way to get more out of your Mac.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. If you're already a member, type GO MACINTOSH at any ! prompt.

CompuServe®

Circle 319 on reader service card



NexSys's Travel Mac fits under an airline seat and uses an easel to adjust the position of its LCD screen.

drive, keyboard, and mouse from any 128K to SE/30 Mac. The result is a portable that's compact enough to fit under an airline seat.

The chassis includes a power supply that works with 110 or 220 volts AC, or with 12 volts DC from a car's cigarette lighter. The Travel Mac also incorporates two gel-cell rechargeable batteries and a connection for additional rechargeable batteries. The internal batteries last for about 2 hours and take about 12 hours to recharge. The portable system weighs about 10 pounds, including the batteries. It measures 12 inches wide by 14 inches long by 3 inches thick, or 5 inches thick when packed together with the keyboard and mouse in the black nylon carrying case.

The Travel Mac also provides a double-supertwist backlit LCD black-on-white display with 512-by-342-dot resolution, which gives the same aspect ratio as a compact Mac screen but does not use the entire 640 by 480 dots supported by the 10-inch

diagonal LCD panel.

A 2400-baud modem with a low-power mode, auto-shutdown, and a complete set of status LEDs is also built in. Travel Mac includes all the standard Mac back-panel connectors, an interface for Kodak's DataShow overhead projector, and an 8-ohm speaker. NexSys included a socket for a fax/modem piggyback board that should be available in the fourth quarter.

The portable comes with instructions for the modem and for assembly, which should take about 15 minutes. The only specialized tool required is a torque allen wrench, which is included.

An optional internal 40MB hard disk lists for \$995. Prices for optional 80MB and 100MB hard disks were not set at press time.

Slated to ship by October, the NexSys Travel Mac lists for \$1795 and comes with a 90-day warranty. For more information, call NexSys Electronics in San Francisco, at 415/255-2293.—T.M.

Survey: What's Your Bottleneck?



For this month's survey we asked 1000 readers where they experience the greatest constraints on overall performance—in other words, "Show us your bottleneck." We received responses from 495 people, 480 of whom use Macs. It's important to point out that fully 66 percent of respondents who use a Mac said they were very satisfied with its performance, and another 31 percent said they were somewhat satisfied.

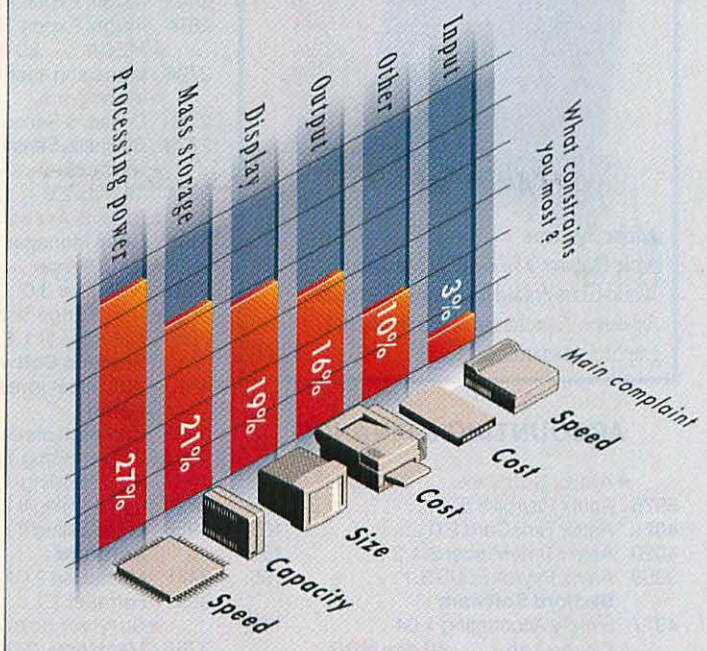
Among responding Mac users, 27 percent said their systems were constrained most by processor, which suggests that Apple's move to 68020 and 68030 micropro-

cessors and faster clock rates comes just in time. Next on the list of bottlenecks was mass storage, with 21 percent of respondents pointing the finger. Of those readers, 60 percent currently have 20MB drives, 15 percent have 40MB devices, and 11 percent have 80MB of storage. Accounting for less than 5 percent each were 10MB, 45MB, 60MB, and 90MB drives.

The display subsystem was the villain for 19 percent of respondents, and output devices were named by 16 percent. Input devices, such as scanners, accounted for just 3 percent. Readers said that they were frustrated by the size of displays, by the cost of output devices, and by the slowness of input devices.

—T.M. ■

CONSTRAINING COMPONENT/ REASON WHY



Among responding readers who had an opinion, 27 percent cited the power of their Mac's processor as the single most restraining component of their hardware and software.

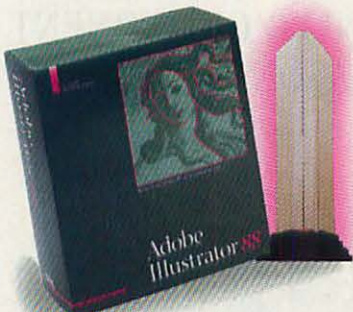
Load it into HyperCard.

What's easy to remember, has a great rap beat, and you can dance to? Our new 800 number. Give it a 10. Actually give it a 3 then another 3 then five 4's, because henceforth our new number is 800/334-4444.

See the red stars? They highlight companies participating in our 30 or 60 day money-back guarantee program. Which means you can return any product from these companies within 30 (or 60) days of receiving it, if, by any chance, it just doesn't do what you need it to do. All we ask is that you save the original packaging. Because, in order to refund your money we need the whole kit and kaboodle back—right down to the registration card. (Just make sure that, during the warranty period, the dog doesn't run off with the packaging materials or the kids don't start using the disks for frisbees).

We only carry the latest versions of products. Version numbers in our ads are current at press time. Also, all of the software we sell is not copy-protected, unless indicated otherwise by (CP).

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.



Adobe Systems
Adobe Illustrator '88 1.6—1989 MacWorld World-Class Award for Drawing/Illustration/Animation. A professional-level Postscript graphics program. \$289

ACCOUNTING & FINANCE

★Aatrix Software ... 30 day MBG

3976	Aatrix Payroll 3.5	95.
4021	Aatrix TimeCard 2.0	105.
4020	Aatrix TimeMinder 2.1.2	155.
3958	Aatrix Payroll PLUS 3.1	155.

Bedford Software

4977	Simply Accounting 1.04	199.
------	------------------------	------

★Chang Labs ... 60 day MBG

1613	Rags to Riches Ledger 3.1	119.
1614	Rags to Riches Payables 3.1	119.
1617	Rags to Riches Receivables 3.1	119.
1622	Rags to Riches 3-Pak	289.
1612	Inventory Control 2.6	239.
1615	Professional Billing 2.9	239.



Syntec ... 30 day MBG

THINK C 4.0—1989 MacWorld World-Class Award for Programming Languages. Powerful development system has incredible speed, source-level debugging and full ANSI standard libraries. \$149.

1616	Professional 3-Pak	359.
1618	Retail Business 3-Pak	359.

★DacEasy Software ... 60 day MBG

4502	DacEasy Light 1.0	42.
------	-------------------	-----

★Dow Jones ... 30 day MBG

1786	Market Manager PLUS 2.0	189.
------	-------------------------	------

★Intuit ... 30 day MBG

2425	Quicken 1.5	36.
------	-------------	-----

★Layered ... 30 day MBG

5207	atOnce! 1.0	295.
2609	Insight Expert AP 2.02	459.
2610	Insight Expert AR 2.2	459.
2611	Insight Expert GL 2.1	459.
2612	Insight Expert Inventory 1.01	459.
5643	Insight Expert Payroll 1.0	459.
2614	Insight Expert Time Billing 2.01	459.

★MECA ... 60 day MBG

2796	Managing Your Money 2.0	125.
------	-------------------------	------

★Monogram ... 30 day MBG

2780	Dollars & Sense 4.1C	81.
2779	Business Sense 1.2	269.

★Nantucket ... 30 day MBG

2971	McMax 2.0	175.
------	-----------	------

★Niles & Associates ... 30 day MBG

5101	Grant Manager 1.75	249.
------	--------------------	------

★Nolo Press ... 60 day MBG

2981	WillMaker 3.0	32.
------	---------------	-----

★North Edge Software ... 30 day MBG

2986	Timeslips III 1.1	169.
------	-------------------	------

Pro Plus Software

4310	Wall Street Investor 3.0	469.
------	--------------------------	------

Satori

3978	Components GL 1.0	389.
3324	Project Billing 1.56	389.
4987	Project Billing + 1.56	589.
3323	Legal Billing II 2.56	389.
4986	Legal Billing II + 2.56	589.

SoftView

3471	MacInUse 2.04	42.
3981	FormSet 1.1	52.

★Survivor Software ... 30 day MBG

3289	MacMoney 3.02	60.
------	---------------	-----

NUMBERS & DATABASES

★Abacus Concepts ... 60 day MBG

4482	StatView SE + Graphics 1.03	225.
4481	StatView II 1.03	295.

★Acus ... 30 day MBG

1010	4th Dimension 1.0.6	\$349.
5618	4th Dimension 2.0	549.
4024	4th Dimension Runtime 1.06	229.

Ashton-Tate

4098	Full Impact 1.0	249.
1322	dBase Mac 1.0	295.

Blyth Software

4318	Omni 3 Plus/Express 3.3	199.
5492	Omni 5	359.

Borland International

1508	Reflex Plus 1.01	189.
------	------------------	------

★BrainPower ... 60 day MBG

1532	DataScan 1.03	109.
1535	DesignScope 1.15	119.
1534	MathView Professional 1.1	129.
1537	StatView 512+ 1.2	149.
3960	ArchiText 1.03	175.
4066	The Analyzer Bundle (includes DataScan, DesignScope, and StatView 512+)	299.

★Bravo Technologies ... 30 day MBG

1539	MacCalc 1.2D	83.
------	--------------	-----

★Chang Labs ... 60 day MBG

1611	C.A.T. 2.0	see box
------	------------	---------

Claris

4196	FileMaker II 1.0	229.
1125	MacProject II 2.0	379.

★Fox Software ... 30 day MBG

5572	FoxBASE II/Mac	255.
4580	FoxBASE +/Mac Runtime 2.0	155.
4844	FoxBASE +/Multi-User 2.0	365.
5579	FoxBASE +/Multi-User Runtime	259.

ICOM Simulations

5206	Formulator 1.1	89.
------	----------------	-----

Individual Software

4720	101 Macros for Excel 1.5	35.
------	--------------------------	-----

Informix

4955	Wingz 1.0	259.
------	-----------	------

★Microsoft ... 30 day MBG

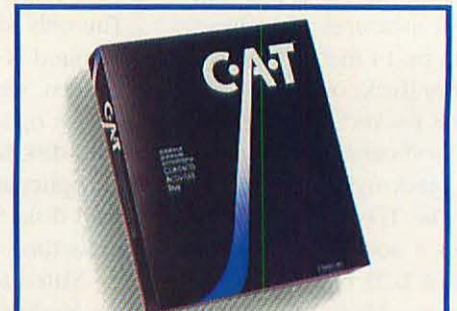
2866	File 2.0A	125.
2884	Works 2.0	185.
2865	Excel 2.2	249.
5454	The Microsoft Office (includes Excel, Word, PowerPoint, and Mail)	549.

★Nolo Press ... 60 day MBG

4228	For the Record 1.0	29.
------	--------------------	-----

★Odesta ... 30 day MBG

3014	GeoQuery 1.0	199.
------	--------------	------



Chang Labs ... 60 day MBG

C.A.T. 2.0—A lightning-fast relational database for managing your contacts; tracking facts, figures, events, and projects; writing letters; and performing mailmerges. Includes free WordFinder thru Oct. 31, 1989. special \$229.

Put it into RAM.



TOPS ... 30 day MBG

TOPS for the Mac 2.4—1989 MacWorld World-Class Award for File Servers. Distributed server configuration allows for maximum resource efficiency. Received an outstanding 44% of total votes. \$145.

- 4211 DataDesk Professional 2.0 289.
- 5621 Double Helix III 349.
- ★Paracomp ... 30 day MBG
- 4664 Milo 1.0 159.
- ★Preferred Publishers ... 30 day MBG
- 4780 DAtabase 1.12 72.
- ★ProVUE ... 60 day MBG
- 4582 Panorama 1.1.1 205.
- ★Rubicon Publishing ... 60 day MBG
- 3272 Dinner At Eight-Encore Edition (CP) 45.
- Satori
- 3320 BulkMailer 3.25 78.
- 3321 BulkMailer Plus 3.25 189.
- ★Softstream Int'l., Inc. ... 60 day MBG
- 5439 Endeavour Planner 99.
- ★Synergy ... 30 day MBG
- 3129 KaleidaGraph 2.0 149.

GRAPHICS & DESIGN

- ★Aegis Development ... 60 day MBG
- 4956 Showcase F/X 1.0 199.
- Altsys
- 4830 KeyMaster 1.0 52.
- 1194 FONtastic Plus 2.02 51.
- Ashton-Tate
- 1323 FullPaint 67.
- Bright Star Technology
- 3962 HyperAnimator 1.5 99.
- Broderbund Software
- 4065 PosterMaker Plus 2.5B 35.
- 1427 Print Shop 1.3 35.
- 4501 Drawing Table 1.0 75.
- ★Casady & Greene ... 60 day MBG
- 1575 Fluent Fonts 2.0 27.
- ★Challenger ... 30 day MBG
- 1610 Mac3D 2.1.2 119.
- Clariss
- 1123 MacPaint II 2.0 99.

- 1117 MacDraw II 1.1 \$299.
- 4815 Smart Form Designer 1.0 299.
- 4814 Claris CAD 1.0 599.
- Cricket Software
- 4346 Cricket Paint 1.0 special 65.
- 1667 Cricket Draw 1.1.1 special 139.
- 5086 Cricket ColorPaint 1.0 179.
- ★Deneba Software ... 30 day MBG
- 1769 Canvas 2.0 169.
- ★DreamMaker ... 60 day MBG
- 4088 MacGallery (MacPaint format) 27.
- Dubi-Click Software
- 5069 World-Class LaserType Vol. 1 42.
- 5070 World-Class LaserType Vol. 2 42.
- 5071 World-Class LaserType Vol. 3 42.
- 5072 World-Class LaserType Vol. 4 42.
- 5073 World-Class LaserType Vol. 5 42.
- 5074 World-Class LaserType Vol. 6 42.
- 3972 World-Class Fonts! Originals 42.
- 3973 World-Class Fonts! Stylish 42.
- 3974 World-Class Fonts! Giants 42.
- 5131 World-Class Fonts! Triples 42.
- 3964 WetPaint Classic Clip-Art (1 & 2) 42.
- 3965 WetPaint For Publishing (3 & 4) 42.
- 3966 WetPaint Animal Kingdom (5 & 6) 42.
- 3967 WetPaint Special Occasions (7 & 8) 42.
- 3968 WetPaint Printer's Helper (9 & 10) 42.
- 3969 WetPaint Industrial Revol. (11 & 12) 42.
- 3970 WetPaint Old Earth Almanac (13 & 14) 42.
- 3971 WetPaint Island Life (15 & 16) 42.
- 4940 WetPaint All the People (17 & 18) 42.
- Electronic Arts
- 5289 Studio/1 1.0 99.
- 4315 Studio/8 1.0 299.
- ★Emerald City ... 30 day MBG
- 5168 Smart Art I 85.
- 5602 Smart Art II 85.
- 5603 Smart Art III 85.
- ★Enabling Technologies ... 30 day MBG
- 1871 Pro3D 1.2 279.

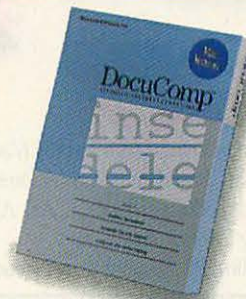


Abacus Concepts ... 60 day MBG

StatView SE+ Graphics 1.03/StatView II 1.03—1989 MacWorld World-Class Award for Statistics/Math. Descriptive & multivariate statistics.
StatView SE+ Graphics 1.03 \$225.
StatView II 1.03 295.

Enzan-Hoshigumi USA

- 1879 MacCalligraphy 2.0 \$99.
- ★Foundation Publishing ... 60 day MBG
- 2385 Comic People 22.
- 2384 Comic Strip Factory 1.6 39.
- ★Generic Software ... 60 day MBG
- 4319 Generic CADD Level 1 1.1 85.
- ★Graphsoft ... 30 day MBG
- 4993 MiniCad+ 1.V5 519.



Advanced Software ... 30 day MBG

DocuComp 1.0—Intelligently compares text documents and notes changes—from the largest to the most miniscule. Useful for legal documents, source code listings, form letters, etc. \$89.

- ★Great Wave ... 30 day MBG
- 2272 Crystal Paint 1.0 special 25.
- Innovative Data Design
- 2417 MacDraft 1.2B 144.
- 4707 Dreams 1.0 269.
- ★Linguist's Software ... 60 day MBG
- Foreign Language Fonts call
- ★MacroMind ... 30 day MBG
- 4953 VideoWorks II 2.0 175.
- 4952 VideoWorks II HyperCard Driver 1.2 60.
- 4954 VideoWorks II Accelerator 1.1 118.
- 5087 MacroMind Director 1.0 449.
- ★MicroMaps ... 30 day MBG
- 5516 MacAtlas (Paint version) 45.
- 5514 MacAtlas (EPSF version) 119.
- 5513 MacAtlas (Professional version) 119.
- 5515 MacAtlas Presentation Pack 119.
- ★NuEquation ... 30 day MBG
- 5428 NuPaint 1.0.4 89.
- ★Paracomp ... 30 day MBG
- 4597 Swivel 3D 1.0 249.
- ★Silicon Beach ... 60 day MBG
- 3504 Silicon Press 1.1 52.
- 3506 SuperPaint 2.0 128.
- 3980 Digital Darkroom 1.1 249.
- 3507 Super3D 2.0 319.
- ★Solutions Int'l. ... 60 day MBG
- 3446 The Curator 1.05 72.
- ★SuperMac Software ... 60 day MBG
- 3380 PixelPaint 2.0 229.
- 5625 PixelPaint Professional 399.



MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

Write it on the walls,



Layered ... 30 day MBG

Insight Expert Accounting Series—1989 MacWorld World-Class Award for Business Accounting. Integrated modules include GL, AR, AP, Inventory Control, Payroll, and Time Billing. each \$459.

★Symmetry ... 30 day MBG

4160 PictureBase-WetPaint Bundle 79.

★T/Maker ... 30 day MBG

3632 ClickArt Business Images 28.
3636 ClickArt Holidays 28.
3642 ClickArt Publications 28.
3633 ClickArt Christian Images 35.

★3G Graphics ... 30 day MBG

3942 Images with Impact: Graphics 1 52.
4583 Images with Impact: Business 1 65.

★Zedcor ... 60 day MBG

3986 DeskPaint & DeskDraw 2.01 65.

PUBLISHING & PRESENTATIONS

Adobe Systems

1138 The Collector's Edition 79.
4816 The Collector's Edition II 139.
5001 StreamLine 1.0 229.
5605 True Form 1.0 229.
5606 True Form Runtime 175.
1137 Adobe Illustrator '88 1.6 289.
1142 Newsletters/Publishing Pack 1 239.
4565 Forms and Schedules Pack 2 289.
4566 Presentations Pack 3 289.
MacConnection carries the entire Adobe Type Library (volumes 1-106). Listed below are Adobe's newest typefaces at press time.
5210 83 Life 95.
5239 84 Concorde 125.
5240 85 Gothic 13 95.
5241 86 Cochin 125.
5242 87 ITC Bauhaus 125.
5243 88 Sabon 125.
5244 89 Hiroshige 239.
5245 90 Arnold Bocklin 125.
5246 91 Dom Casual 95.
5247 92 Post Antiqua 95.
5248 93 Folio 125.
5249 94 Linoscript 95.
5250 95 VAG Rounded 125.
5675 96 Akzidenz Grotesk 125.
5674 97 Impremum 95.
5673 98 Bauer Bodoni 125.
5672 99 New Aster 239.
5671 100 Adobe Garamond 179.

5670 101 Adobe Garamond Expert Coll. \$125.
5669 102 Candida 95.
5668 103 Franklin Gothic No. 2 95.
5667 104 Utopia 179.
5666 105 Utopia Expert Collection 125.
5665 106 ITC Berkeley Oldstyle 239.

Aldus

1330 Freehand 2.0 349.
4751 Persuasion 1.0 375.
1331 PageMaker 3.01 389.

Altsys

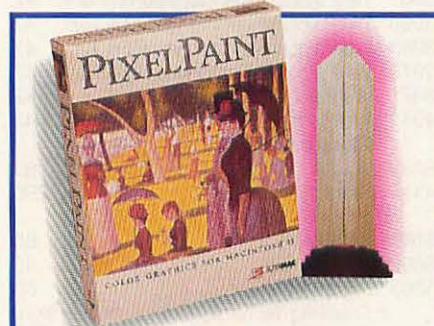
1195 Fontographer 3.0 (CP) 249.

Broderbund

4465 DTP Advisor 1.0 47.

★Casady & Greene ... 60 day MBG

4839 Vivid Impressions 67.
1576 1 Bodoni 46.
1587 2 Sans Serif 46.
1588 3 Ritz 46.
1589 4 Monterey 46.
1590 5 Calligraphy 46.
1591 6 Prelude 46.
1592 7 Coventry-Zephyr 46.
1593 8 Dorovar-Gregorian 46.
1594 9 Cyrillic 46.



SuperMac Software ... 60 day MBG

PixelPaint 2.0—1989 MacWorld World-Class Award for Color Paint Programs. An enormous set of tools include variable airbrushes, blends, drop shadows, customizable palettes, and multiple fill effects. \$229.

1577 10 Bodoni Ultra 46.
1578 11 Sans Serif Bold 46.
1579 12 Sans Serif Extra Bold 46.
1580 13 Gatsby Light 46.
1581 14 Micro 46.
1582 15 Micro Extended 46.
1583 16 Galileo Roman 46.
1584 17 Campanile-Giotto 46.
1585 18 Alexandria 46.
1586 19 Jott 46.
4204 20 Gazelle & Kells 46.
4205 21 Paladin-Abalene 46.
4206 22 Collegiate 46.
4838 Quill Pack (Vol. 8 & 20) 89.
4836 Headline Pack (Vol. 10-12) 129.
4837 Modern Pack (Vol. 7, 14-18) 189.
4834 Distinctive Pack (Vol. 8, 19-22) 189.
4833 Classic Pack (Vol. 3-6, & 13) 189.

Cricket Software

1668 Cricket Graph 1.3 115.
1670 Cricket Presents 2.0 285.

★DreamMaker ... 60 day MBG

4840 Cliptures: Business 1 85.

4841 Cliptures: Business 2 \$85.

★Farallon Computing ... 30 day MBG

4684 ScreenRecorder 1.0 129.
2199 MacRecorder 2.0 164.

ICOM Simulations

5682 MacKern 115.

Letraset

2621 Ready,Set,Go! 4.5 275.
2619 Image Studio 1.5 275.
4709 LetraStudio 1.0 275.

★Microsoft ... 30 day MBG

2878 PowerPoint 2.01 249.

★Postcraft Int'l. ... 60 day MBG

3157 Laser FX 1.7 99.

Quark

4621 QuarkStyle 1.0 175.
3230 Quark XPress 2.1 495.

★Softstream Int'l., Inc. ... 60 day MBG

4996 UltraSpec 1.0 95.

★Springboard ... 30 day MBG

3530 Certificate Maker 2.0 22.
3532 Certificate Library 18.
4497 Top Honors 1.01 59.
4500 Springboard Publisher 1.0 109.

★T/Maker ... 30 day MBG

3635 EPS Illustrations 74.
5167 EPS Business Art 74.

PROGRAMMING & HYPERMEDIA

Bantam Publishing

1403 Complete HyperCard Handbook 23.

★Beacon Technology ... 30 day MBG

4967 HyperBible (King James) 1.0 149.
4968 HyperBible (New International) 1.0 179.

Borland International

1511 Turbo Pascal 1.1 68.
1512 Turbo Pascal Tutor 1.0 46.

Broderbund Software

5237 Whole Earth Catalog (CD ROM) 89.

★Digitaltalk ... 60 day MBG

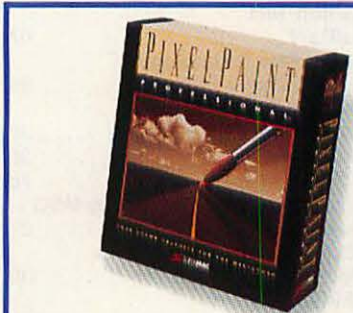
5166 SmallTalk/V Mac 1.1 129.

★DreamMaker ... 60 day MBG

4115 MacGallery (HyperCard format) 27.

★Hyperpress Publish. ... 30 day MBG

5435 HyperOne 1.0 29.
4233 Icon Factory 1.0 29.
5089 Script Library 1.0 29.



SuperMac Software ... 60 day MBG

PixelPaint Professional 1.0—The first true color paint program for the Mac. Designed to grow with you: from 8-bit to 32-bit systems; from general painting to advanced design. \$399.

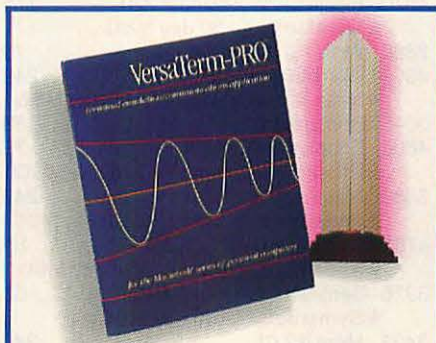
anywhere you can.

5090	Silver Screen 1.0	\$40.
4265	Script Expert 1.0	45.
5434	Intelligent Developer 1.0	219.
ICOM Simulations		
4085	TMON 2.8.2	89.
5681	HyperTMON	59.
Individual Software		
4719	101 Scripts & Buttons Hypercard 1.0	36.
★Manx Software ... 60 day MBG		
4068	Aztec C 3.6B	65.
4317	Aztec SDB	65.
4316	Aztec C UniTools	65.
4069	Aztec MPW C 3.6B	99.
4075	Aztec C + SDB 3.6B	99.
★MicroMaps ... 30 day MBG		
5513	HyperAtlas	59.
5518	QuickMap	59.
★Microsoft ... 30 day MBG		
4471	QuickBasic 1.0	69.
Olduvai		
5446	PLUS 1.1	115.
★OWL International ... 30 day MBG		
3082	Guide 2.0	99.
★Silicon Beach ... 60 day MBG		
5100	SuperCard 1.0	129.
★SmethersBarnes ... 30 day MBG		
1478	Prototyper 2.0	189.
★Softstream Int'l., Inc. ... 60 day MBG		
5440	HyperHIT 1.0	125.
★Springboard ... 30 day MBG		
4495	Family Matters 1.0	28.



Microsoft ... 30 day MBG
PowerPoint 2.01—1989 MacWorld World-Class Award for Business Presentation Graphics. Design and arrange full presentations in one program. Output can be sent to Genigraphics for color slides. ... \$249.

★Symantec ... 30 day MBG		
4644	Just Enough Pascal 1.0	47.
3421	THINK Pascal 2.0	89.
3420	THINK C 4.0	149.
★Symmetry ... 30 day MBG		
3318	HyperDA 1.1	35.
TENpoint0		
1338	Reports! 1.2	69.
4638	Focal Point II 1.0	117.



Synergy ... 30 day MBG
VersaTerm PRO 3.0—1989 MacWorld World-Class Award for Micro-To-Mainframe Communications. Powerful terminal program specializes in VT and Tektronix emulation. ... \$175.

★TML Systems ... 30 day MBG		
3548	TML Source Code Library II 1.1	39.
4989	TML Pascal II 3.0 (w/o MPW 3.0)	57.
3549	TML Pascal II 3.0 (w/MPW 3.0)	109.
Trendware		
5203	Stack Cleaner	29.
5202	HyperTools #1 1.02	52.
5199	HyperTools #2 1.03	52.
5609	XCAL 1.0	79.
True BASIC, Inc.		
3587	True BASIC 2.01	59.
3573	Arithmetic	35.
3571	Algebra Utilities	35.
3575	Calculus Utilities	35.
3580	Pre-Calculus (with Trigonometry)	35.
3583	Scientific Graphics Tool Kit	49.
★Zedcor ... 60 day MBG		
3985	ZBASIC 5.0	95.

UTILITIES

★Abbott Systems ... 30 day MBG		
5236	CanOpener 1.0	65.
★Affinity Microsystems ... 60 day MBG		
1014	Affinifile 1.1	45.
1016	Tempo II 1.02	79.
★Berkeley Systems ... 30 day MBG		
1541	Stepping Out II 2.01	50.
Beyond, Inc.		
4203	MenuFonts 2.02	28.
Borland		
1510	Sidekick 2.0	68.
★Bravo ... 30 day MBG		
5404	SPAMM 1.0	49.
★Casady & Greene ... 60 day MBG		
2269	QuickDEX 1.4A	31.
★CE Software ... 60 day MBG		
1727	CalendarMaker 3.0	32.
1728	DiskTop 3.0.4	32.
4689	MockPackage Plus Utilities 4.4	32.

1729	QuickKeys 1.2	\$65.
Central Point		
5040	Copy II Mac 7.2	24.
5041	PC Tools Deluxe Mac 1.1	46.
★Dantz Development ... 30 day MBG		
5255	Retrospect 1.0	155.
Dubl-Click Software		
1824	Calculator Construction Set 1.04	35.
Electronic Arts		
1843	Disk Tools Plus 1.01 (Batteries Incl.)	31.
★Fifth Generation ... 60 day MBG		
4287	PYRO! 3.3 (screen saver)	15.
3954	PowerStation 2.5	35.
3955	Suitcase II 1.2.2	45.
5178	FastBack II 1.0	108.
★HJC Software ... 30 day MBG		
4803	Virex 2.0	59.
ICOM Simulations		
4084	On Cue 1.3	35.
Ideaform		
2419	DiskQuick 2.10	27.
2420	MacLabeler Plus 3.0	42.
★Kent Marsh Ltd. ... 30 day MBG		
5457	QuickLock 1.0	57.
2591	The NightWatch 1.03	87.
2592	MacSafe 1.08C	87.
★Loop Software ... 30 day MBG		
5442	PictureBook	40.
★Lundeen & Assoc. ... 60 day MBG		
2683	WorksPlus Command 2.0	57.
MEDIAGENIC		
4591	Open It! 1.0	49.
★Microlytics ... 60 day MBG		
2732	GOfer 2.0	47.
★Microseeds Pub. ... 60 day MBG		
4848	INITPicker 1.0	27.
4210	Screen Gems 1.0	42.
2913	Redux 1.5	52.
Olduvai Software		
4503	MultiClip 1.01	51.



Digitalk ... 60 day MBG
SmallTalk/V Mac 1.1—The original object-oriented development environment. Extensive manual and tutorial. Easily integrates with other languages. Complete toolbox access. MultiFinder friendly. ... \$129.

990C
MMC
MACRO MICRO COMPUTER MARKETING COMPANY

MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

We've got a new number



Microsoft ... 30 day MBG
Word 4.0—1989 MacWorld World-Class Award for Word Processing. Features complete WYSI-WYG editing and automatic repagination. Over 65% of users chose Word. \$249.

★PCPC ... 30 day MBG

3175 HFS Backup 3.0. 54.

★Solutions Int'l. ... 60 day MBG

3448 SmartScrap & The Clipper 2.1 45.

3449 SuperGlue II 2.0. 62.

★SuperMac Software ... 60 day MBG

3381 Sentinel 2.0. 89.

3383 SuperSpool 5.0. 59.

3382 SuperLaserSpool 2.0. 89.

3378 SuperLaserSpool 5-Pack 2.0. 295.

3377 DiskFit 1.5. 59.

3379 Network DiskFit 1.5. 229.

★Symantec ... 30 day MBG

4729 Symantec Utilities for Mac II. 63.

5176 Symantec Anti-virus for Mac 1.0. 95.

★Williams & Macias ... 30 day MBG

3779 DiskFinder. 29.

3783 myDiskLabeler w/Color 2.9.11. 29.

3784 myDiskLabeler w/LaserWriter 2.9.11. 34.

3780 ImageWriter II Label Pack (Qty. 216) 16.

3781 LaserWriter Label Pack (Qty. 216) 20.

4976 Sticky Business 1.0.6. 95.

★XTree ... 30 day MBG

5177 XTreeMac 1.0. 52.

WORD PROCESSING

★A Lasting Impression ... 30 day MBG

5465 ResumExpert (reqs. MS Word 3+) . 49.

★Advanced Software ... 30 day MBG

5608 DocuComp. 89.

★Aegis Development ... 60 day MBG

1133 Word Tools 1.2. 42.

Ashton-Tate

1324 FullWrite 1.0. 259.

Claris

1129 MacWrite II. 185.

★Deneba Software ... 30 day MBG

4700 BigThesaurus 1.0. 59.

1767 Comment 2.0. 59.

1768 Coach Professional 3.0C. 115.

Electronic Arts

1543 Thunder II 1.0 (Batteries Included) . 52.

★Lundeen & Assoc. ... 60 day MBG

2684 WorksPlus Spell 2.0. 46.

★Microlytics ... 60 day MBG

2733 Word Finder 2.0. 36.

4870 Electronic WordFinder 220. \$75.

★Microsoft ... 30 day MBG

2885 Write 1.0. 79.

4969 Word 4.0. 249.

★Niles & Associates ... 30 day MBG

5048 EndLink 1.0. 58.

4602 EndNote 1.2.1. 75.

★Paragon Concepts ... 30 day MBG

5683 Nisus. 249.

★Preferred Publishers ... 30 day MBG

4781 Vantage 1.0. 55.

★Sensible Software ... 30 day MBG

3375 Sensible Grammar 1.5.2. 53.

★Symantec ... 30 day MBG

3422 More II 2.01. 249.

★Symmetry ... 30 day MBG

4504 Acta Advantage 1.0. 65.

★T/Maker ... 30 day MBG

3639 WriteNow 2.0. 109.

★WordPerfect ... 60 day MBG

3800 WordPerfect Mac 1.0.2. 185.



Coda Music Software
Finale 1.2.6—1989 MacWorld World-Class Award for Music. Advanced technology brings affordability and flexibility to desktop music publishing. \$479.

Working Software

3788 Findswell 2.0. 36.

3792 Spellswell 2.0G. 45.

4693 QuickLetter 1.0. 73.

MUSIC & EDUCATION

★Ars Nova ... 60 day MBG

1215 Practica Musica 2.1. 73.

★Bogas Productions ... 60 day MBG

1461 Studio Session 1.2 SE. 46.

4255 Super Studio Session 2.0. 69.

1459 Heavy Metal Rock. 14.

1460 String Quartet. 14.

1458 Country Disk. 14.

4832 Sound Effects. 14.

Bright Star Technology

1402 Alphabet Blocks 1.0. 30.

3961 Talking Tiles 1.0. 27.

Broderbund Software

4314 Type! 1.0. 19.

1423 Jam Session 1.1 (CP). 30.

1422 Geometry 1.2 (CP). 59.

4067 Calculus 1.2 (CP). 59.

1426 Physics 1.0 (CP). 59.

Coda Music Systems

4367 MacDrums 1.01 (CP). 31.

4483 Perceive 1.0. \$50.

5604 Finale 1.2.6. 479.

Davidson & Associates

1734 Math Blaster! 1.0 (CP). 27.

4978 Speed Reader II 1.0 (CP). 36.

Electronic Arts

4619 Mavis Beacon Typing 1.2B (CP). 33.

1846 Deluxe Music Construction Set 2.5. 84.

First Byte

5294 Puzzle Storybook 1.0 (ages 3-8) . . . 27.

5293 Dinosaur Discovery Kit 1.0 (ages 3-8)27.

3941 SmoothTalker 2.1. 33.

3935 Speller Bee 2.0. 33.

3936 KidTalk 2.0. 33.

3940 First Shapes 2.0. 33.

★Great Wave ... 30 day MBG

2277 TimeMasters 1.0. 22.

2276 KidsTime 1.2. 26.

5642 KidsMath 1.1. 26.

4334 NumberMaze 1.0. 26.

2270 American Discovery 2.3. 27.

2273 ConcertWare+ 4.0. 38.

2271 ConcertWare+ MIDI 4.0. 78.

Learning Company

2670 Reader Rabbit 2.1 (CP). 31.

5453 Talking Math Rabbit 1.0. 31.

Mindscape

2748 The Perfect Score: SAT 1.0. 32.

★Personal Training Sys. ... 60 day MBG

Excellerate Training Series

4946 E1 Beginning Spreadsheets. 29.

5091 E2 Creating Business Graphs. 29.

4858 E3 Intermediate Spreadsheets. 29.

5092 E4 Building Databases. 29.

5093 E5 Beginning Macros. 29.

5094 E6 Linking Spreadsheets. 29.

5095 E7 Advanced Spreadsheets. 29.

5099 E8 Advanced Macros. 29.

Excellerate 2.2 Training Series

5573 XL1 Beginning Spreadsheets. 39.

5574 XL2 Intermediate Spreadsheets. 39.

5575 XL3 Advanced Spreadsheets. 39.

5576 XL4 Creating Business Graphics. . . 39.

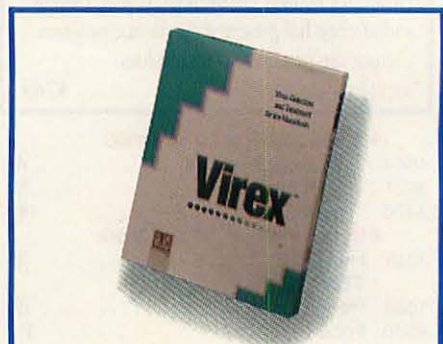
MacTeach Training Series

5263 B1 The Basics (for 2 floppy drives). . 39.

5264 B2 The Basics (for Plus or SE w/HD) 39.

5265 B3 The Basics (for Mac II w/HD) . . 39.

5266 B4 Beyond the Basics. 39.



HJC Software ... 30 day MBG

Virex 2.0—The first comprehensive solution to the threat of Mac computer viruses. Detects their presence, repairs infected files, and prevents reinfection. Now includes VirexGuard. . . \$59.

that you can memorize.



Silicon Beach Software ... 60 day MBG
SuperPaint 2.0—1989 MacWorld World-Class Award for *Black and White Paint Programs*. Combines painting and drawing in a single program with an elegant interface. SuperPaint took 60% of the vote. \$128.

- LearnWord Training Series*
- 4947 W1 Beginning Level 39.
 - 4854 W2 Intermediate Level 39.
 - 5098 W3 Advanced Level 39.
 - 5418 W4 Additional Features. 39.
- LearnPersuasion Training Series*
- 5269 LP1 Beginning Persuasion 39.
 - 5270 LP2 Intermediate Persuasion 39.
 - 5271 LP3 Creating AutoTemplates. 39.
 - 5272 LP4 Creating Artwork 39.
- HyperEasy Training Series*
- 5194 H1 Using HyperCard 39.
 - 5195 H2 Creating Cards & Stacks 39.
 - 5267 H3 Basic Scripting 39.
 - 5268 H4 Advanced Scripting. 39.
- PageTutor Training Series*
- 4852 P1 Beginning PageMaker. 39.
 - 4853 P2 Intermediate PageMaker 39.
 - 5096 P3 Tips & Techniques 39.
 - 5097 P4 Advanced Features 39.
- MasterWorks Training Series*
- 5196 M1 Database & Form Letters 39.
 - 5197 M2 Advanced Databases 39.
 - 5273 M3 Spreadsheets 39.
 - 5274 M4 Word Processing 39.
- Learn88 Training Series*
- 5259 A1 Beginning Illustrator 39.
 - 5260 A2 Intermediate Illustrator 39.
 - 5261 A3 Creating Special Effects. 39.
 - 5262 A4 Precision Drawing Techniques. 39.
- Learn FileMaker Training Series*
- 5278 FM1 Beginning FileMaker. 39.
 - 5279 FM2 Intermediate FileMaker 39.
 - 5280 FM3 Advanced FileMaker. 39.
 - 5281 FM4 Tips & Techniques. 39.
- ★**Simon & Schuster ... 60 day MBG**
- 3305 Typing Tutor IV 1.2 34.
- ★**Spinnaker ... 30 day MBG**
- 2329 SAT Score Improvement 1.0 (CP) . . . 57.

- ★**Springboard ... 30 day MBG**
- 4493 Atlas Explorer (CP) \$28.
- ★**Think Educational ... 60 day MBG**
- 3615 MacEdge II 1.0 (CP) 27.
 - 3616 Mind Over Mac 1.4 (CP) 27.
- ★**Unicorn ... 30 day MBG**
- 3751 Animal Kingdom (CP) 27.
 - 3756 Math Wizard (CP) 27.
 - 3753 Fraction Action (CP) 27.
 - 3755 MacRobots (CP) 27.
 - 3754 Read-A-Rama (CP) 32.

ENTERTAINMENT

- Access Software**
- 4655 World Class Leader Board Golf. . . . 27.
- Activision**
- 4475 Quarterstaff (CP) 30.
 - 4679 Universal Military Simulator. 30.
 - 4486 Manhole 30.
 - 5127 Manhole (CD ROM) 35.
 - 4490 Might & Magic (CP) 35.
 - 4592 Zork Zero (CP) 35.
 - 5517 Cosmic Osmo. 42.
- Addison-Wesley**
- 4407 The Hobbit (CP) 24.
 - 4474 Fellowship of the Ring (CP) 24.
- Broderbund Software**
- 4099 Shufflepuck Cafe (CP) 24.
 - 4111 Moebius (CP) 24.
 - 1421 Ancient Art of War (CP) 27.
 - 4540 Ancient Art of War at Sea (CP) 27.
 - 4229 Where/World Carmen Sandiego? (CP) . . . 27.
 - 5233 Where/USA Carmen Sandiego? (CP) . . . 29.
 - 4966 SimCity 1.1 (CP) 29.
- Bullseye**
- 1544 Ferrari Grand Prix (CP) 32.
 - 4074 P51 Mustang Flight Simulator (CP) . . . 32.
- ★**Casady & Greene ... 60 day MBG**
- 2268 Crystal Quest 2.2T 25.



Symantec ... 30 day MBG
More II 2.01—1989 MacWorld World-Class Award for *Outline Processing*. A complete planning and presentation solution. Commanding winner with 58% of total votes. \$249.

- 4119 Crystal Quest w/Critter Editor 2.2T. \$41.
- ★**Discovery Software ... 30 day MBG**
- 4408 Arkanoid. 26.
- Electronic Arts**
- 1850 Reach for the Stars 26.
 - 1842 Chessmaster 2000 (CP) 28.
 - 5554 Bard's Tale 32.



Preferred Publishers ... 30 day MBG
Database 1.12—Full-featured desk accessory database for text, graphics and color images. Includes a unique converter and minifinder interface for merging and accessing frequently used files. \$72.

- 4064 Chuck Yeager Flight Simulator 32.
 - 4588 Life & Death (CP) 32.
 - 4945 The Hunt for Red October. 32.
 - 4981 Starfleet 1 36.
- Epyx**
- 2037 Sub Battle Simulator 29.
 - 4660 Sub Battle Simulator for Mac II 29.
- MicroProse**
- 4697 Pirates! (CP) 35.
- ★**Microsoft ... 30 day MBG**
- 2868 Flight Simulator (CP) 33.
- Miles Computing**
- 5253 The Puzzle Gallery 27.
 - 2765 Fool's Errand (CP) 32.
 - 2767 Harrier Strike Mission II (CP) 32.
- Mindscape**
- 4083 Balance of Power 1990 (CP) 30.
 - 3987 Colony (CP) 30.
 - 2745 Deja Vu (CP) 30.
 - 4596 Deja Vu II (CP) 30.
 - 2743 Crossword Magic (CP) 30.
 - 5429 Aussie Joker Poker (CP) 30.
 - 2749 Shadowgate (CP) 30.
 - 5252 Gauntlet (CP) 30.
 - 2751 Uninvited (CP) 30.
 - 2750 Siboot: Trust & Betrayal (CP) 30.
- PCAI**
- 3144 MacGolf 2.0 (CP) 34.
 - 4320 MacGolf Classic (CP) 53.
 - 4321 Lunar Rescue (CP) 34.
 - 4517 Road Racer (CP) 39.
- Sierra On-Line**
- 4161 Mother Goose (CP) 19.

So believe your eyes.



Symantec ... 30 day MBG

Symantec Utilities for Mac (SUM) II-1989
MacWorld World-Class Award for Disk and File Utilities. Includes crashed disk and deleted file recovery, backup, optimization, and data security. \$95.

3397	Leisure Suit Larry (CP)	23.
3394	King's Quest (CP)	29.
3395	King's Quest II (CP)	29.
3396	King's Quest III (CP)	29.
3398	Police Quest (CP)	29.
3399	Space Quest (CP)	29.
3400	Space Quest II (CP)	29.

★Silicon Beach ... 60 day MBG

3502	Beyond Dark Castle	32.
3501	Apache Strike	32.
3503	Dark Castle	32.

Sir-Tech

3347	Mac Wizardry (CP)	35.
------	-------------------	-----

★Softstream Int'l., Inc. ... 60 day MBG

4071	MacMan	23.
4072	The Solitaire DA	23.
4995	Cribbage Tutor	26.
4073	Colour Billiards	38.

★Spectrum Holobyte ... 30 day MBG

4175	Solitaire Royale (for Mac SE)	19.
4001	Solitaire Royale (for Mac II)	19.
3464	Tetris	20.
4472	Tetris (color version)	24.
3462	PT-109	26.
3460	GATO	26.
3459	Falcon 2.0	31.

★Spinnaker ... 30 day MBG

2328	Sargon IV (CP)	29.
------	----------------	-----

★Springboard ... 30 day MBG

4988	Hidden Agenda	36.
------	---------------	-----

★SubLogic ... 60 day MBG

4698	Jet (CP)	32.
------	----------	-----

NETWORKS & COMMUNICATIONS

★Abaton ... 30 day MBG

4589	InterFAX Modem	349.
------	----------------	------

★CE Software ... 60 day MBG

5636	In/Out (5 user Pak)	129.
5638	In/Out (10 user Pak)	189.
5174	QuickMail (5 user Pak)	175.
5173	QuickMail (10 user Pak)	259.

★CompuServe ... 60 day MBG

1676	CompuServe Information Service	24.
1673	CompuServe Navigator 2.1	45.
1674	Standard Service/Navigator Bundle	59.

Connect, Inc.

5445	MacNet	47.
------	--------	-----

★DataViz ... 60 day MBG

1823	MacLink Plus/PC 4.0	\$139.
4842	MacLink Plus/Translators 4.0	115.

★Dove Computer ... 60 day MBG

4939	FastNet III	375.
4938	FastNet SE	375.
5624	FastNet SE30	375.
4937	FastNet SCSI	749.

★Dow Jones ... 30 day MBG

5295	News/Retrieval Membership Pack	24.
1785	Desktop Express 1.03	95.

★Farallon Computing ... 30 day MBG

4208	Timbuktu 3.0	95.
4866	Timbuktu Remote 1.0.1	195.
4867	Timbuktu 30-Pack 2.0.1	1325.
2201	TrafficWatch 1.08	135.
2202	PhoneNET to LocalTalk Adapter	9.
5664	PhoneNET StarConnector	18.
2203	PhoneNET PLUS (DIN-8)	35.
2204	PhoneNET PLUS (DB-9)	35.
5251	PhoneNET CheckNET	65.
4869	PhoneNET Connector 10-Pack	215.
4868	PhoneNET Repeater	325.
2206	PhoneNET StarController	1095.



Farallon Computing ... 30 day MBG

Timbuktu 3.0—View and control other Macs across a network. New version allows for multiple security levels and passwords, as well as drop folders and file transfer capabilities. \$95.

2205	Star Wiring Kit (Punchdown)	65.
5455	Star Wiring Kit (Harmonica)	65.

★Freesoft ... 60 day MBG

2219	Red Ryder 10.3	52.
------	----------------	-----

Hayes

2300	Smartcom II 3.1	88.
2307	Smartmodem 2400	429.
5169	2400M (internal w/Smartcom II)	459.

Insignia Solutions

4089	SoftPC 1.3	249.
------	------------	------

Intel Corporation

5119	2400 Baud External Modem	179.
------	--------------------------	------

★Lamir ... 30 day MBG

4984	Acknowledge 1.0	special 289.
------	-----------------	--------------

★Microsoft ... 30 day MBG

2875	Microsoft Mail 1.37 (1-4 users)	195.
2872	Microsoft Mail 1.37 (5-10 users)	325.
2873	Microsoft Mail 1.37 (11-20 users)	489.
2874	Microsoft Mail 1.37 (21-32 users)	625.

★Nuvotech ... 60 day MBG

3000	TurboNet ST (DIN-8)	30.
3001	TurboNet ST (DB-9)	30.

★Practical Peripherals ... 30 day MBG

3100	1200 Baud External Modem	77.
------	--------------------------	-----

3102	2400 Baud External Modem	\$179.
5285	PM 2400SA MNP Modem	209.
3089	Mac Communications Pack 1.5	225.

★Shiva ... 30 day MBG

3444	NetSerial X232	279.
4347	NetBridge	349.
4942	TeleBridge	349.
3443	NetModem V2400	439.

★Software Ventures ... 30 day MBG

3454	MicroPhone 1.5	115.
3455	MicroPhone II 2.0 (receive a free upgrade to 3.0)	219.

★Solutions Int'l. ... 60 day MBG

4308	BackFAX (reqs. Apple FAX modem)	125.
------	---------------------------------	------

★Synergy ... 30 day MBG

3130	VersaTerm 4.0	89.
3131	VersaTerm-PRO 3.0	175.

★TOPS ... 30 day MBG

4188	TOPS Teleconnector (DIN-8)	29.
4189	TOPS Teleconnector (DB-9)	29.
3726	TOPS for DOS 2.1	115.
4598	TOPS FlashBox	125.
3725	TOPS Repeater	129.
3723	TOPS Mac 2.1	145.
3720	TOPS Flashcard	159.
3724	NetPrint 2.0	119.
4714	InBox Starter Kit 2.2	149.
4715	InBox Connection Mac 2.2	49.

★Traveling Software ... 60 day MBG

3729	LAP-LINK Mac 2.0	83.
------	------------------	-----

INPUT/OUTPUT

Caere

4476	OmniPage 2.0	559.
5607	OmniPage/Dove MSE5 Bundle	1779.

★Cutting Edge ... 30 day MBG

3988	CE 105ADB Keyboard w/QuickKeys	135.
------	--------------------------------	------

★Datadesk ... 30 day MBG

1818	HyperDialer	24.
1819	MAC-101 Keyboard (beige)	139.
1820	MAC-101 Keyboard (platinum)	139.
1821	MAC-101 Keyboard (ADB)	139.
	Foreign keyboards available	call

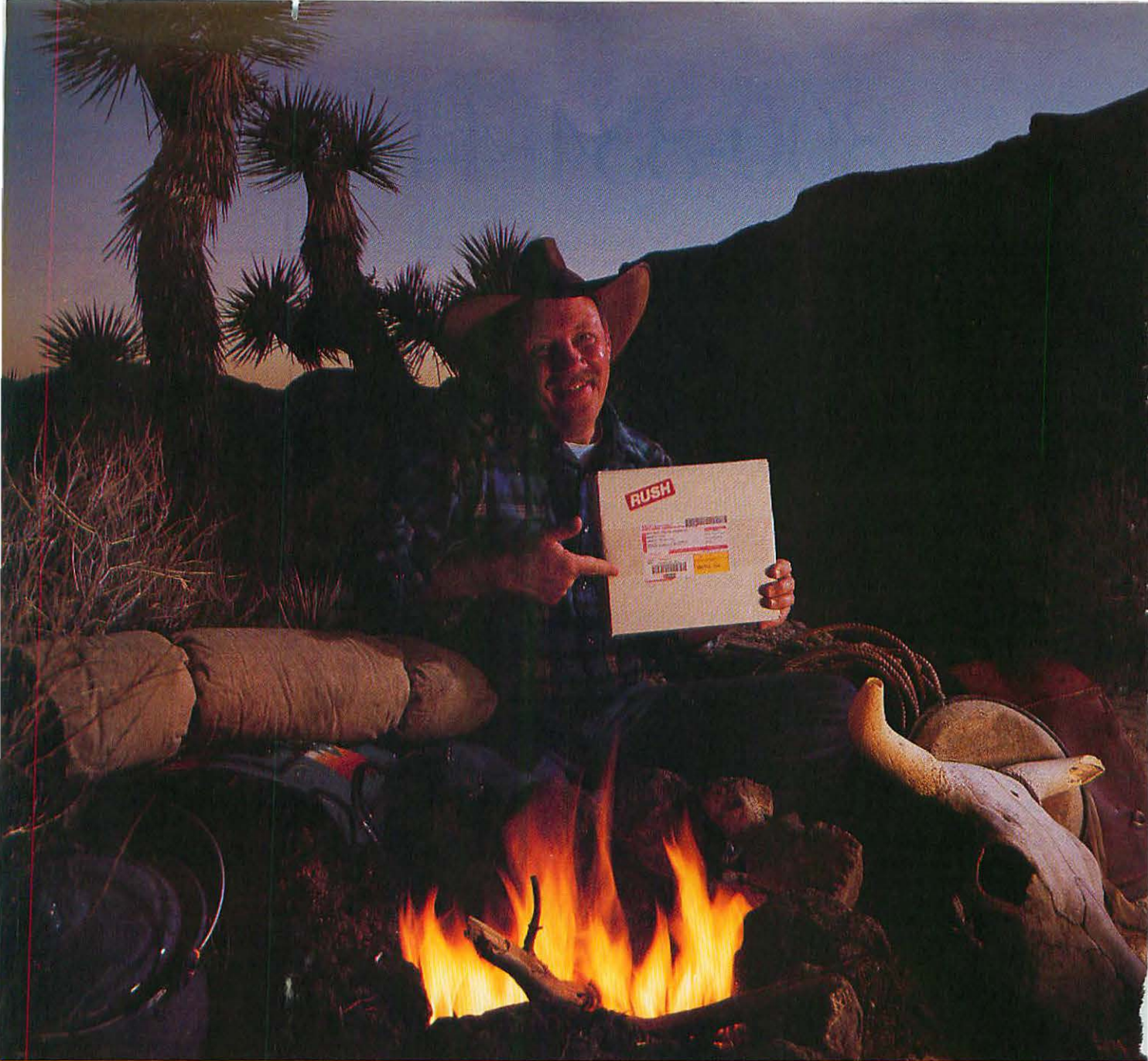
★Kensington ... 30 day MBG

2576	Turbo Mouse for Mac Plus 3.0	109.
2547	Turbo Mouse ADB 3.0	109.



Microsoft ... 30 day MBG

Excel 2.2—1989 MacWorld World-Class Award for Spreadsheets. New version utilizes up to 8 megs of memory and is 40% faster. Received 85% of total votes! \$249.



"No one delivers to Red Rock Canyon."

Dear MacConnection,

You lied to me! When I telephoned an order last Tuesday at 5 PM (8 PM EST), you told me that there would be no more shipping that day, and my order would not arrive until Thursday.

On Wednesday, my order was delivered! When I ask for next day service from

places that proclaim it, they all say, "We're sorry, but due to your location it will be two or three day service." I live in the middle of the Mojave Desert—no one delivers to Red Rock Canyon State Park. Not U.S. Mail, not U.P.S., not nobody. But you did even when you said you couldn't!

Truly remarkable service.

Robert G. Rich

Robert G. Rich
Cantil, CA

MacConnectionTM 1-800/334-4444

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

© Copyright 1989 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

Just for the record, all the ads in this series feature photographs of real live MacConnection customers and the real live letters they wrote us. Really!

800-334-4444.

- 4813 Round Lables 3 1/2" (Qty. 150) \$7.
- 4812 Laser Labels 1/2" x 1 3/4" (Qty. 2000) . 7.
- 4807 Laser Labels 1" x 2 5/8" (Qty. 3000) . 24.
- 4808 Laser Labels 1 1/2" x 4" (Qty. 1400) . 24.
- 4809 Laser Labels 2" x 4" (Qty. 1000) . . . 24.
- 4810 Laser Labels 8 1/2" x 11" (Qty. 100) . 24.

★Basic Needs ... 60 day MBG

- 5635 Keyboard Flip 8.
- 5633 LaserWriter Printer Stand 29.
- 5634 Large Screen Monitor Stand 39.

★Computer Coverup ... 60 day MBG

- 1722 ImageWriter LQ Cover 8.
- 1723 ImageWriter II Cover 8.
- 1720 Mac Plus Cover 10.
- 1724 Mac SE Cover 10.
- 1725 Mac SE Ext. Keyboard Cover Set . . 10.
- 4657 LaserWriter II Cover 10.

★Goldstein & Blair ... 30 day MBG

- 2267 The Macintosh Bible (2nd Edition) . . 20.

★I/O Design ... 30 day MBG

- 2379 MacLuggage Imageware II 49.
- 2376 MacLuggage Macinware Plus 64.
- 2381 MacLuggage Macinware SE 75.

Kalmar Designs

- 2531 Teakwood RollTop Case (holds 45 disks) 14.
- 2532 Teakwood RollTop Case (holds 90 disks) 21.
- 2533 Teakwood RollTop Case (holds 135 disks) 31.

★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. Partial listing below.

- 2577 Mouseway Pad 8.
- 2569 Mac Plus/SE w/System Saver Cover . 9.
- 2558 ImageWriter II Dust Cover 9.
- 2589 Universal Printer Stand 15.
- 4970 Modem/FAX Protector 10 15.
- 4971 Modem/FAX Protector 20 25.
- 4126 LaserWriter II Dust Cover 17.
- 2580 Mac II Stand 20.
- 2545 Universal Copy Stand 22.
- 2573 Tilt/Swivel (platinum) 22.
- 2578 Extra Long ADB Keyboard Cable . . 25.
- 4971 Modem/FAX Protector 20 25.
- 2579 Mac II Monitor Cable Extension Kit . 33.
- 4972 Power Tree 10 19.
- 4973 Power Tree 20 27.
- 4974 Power Tree 50 54.
- 2559 Apple Security Kit 34.

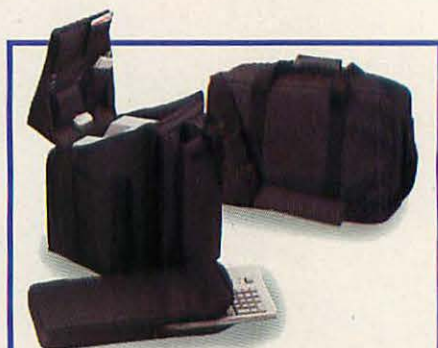
- 2568 Maccessories SuperBase \$34.
- 2585 Printer Muffler 80 43.
- 2586 Printer Muffler 80 Stand 24.
- 4070 System Saver SE 52.
- 2566 System Saver Mac (platinum) 64.
- 2567 System Saver Mac (beige) 64.
- 2546 A-B Box (DIN-8) 64.
- 2556 Maccessories Anti-Glare Filter SE . . 33.
- 5064 Apple Color Monitor Polarizing Filter 65.
- 5065 Full Page Display Polarizing Filter . . 65.
- 5066 Two Page Display Polarizing Filter . 135.
- 4941 Mac II Monitor Stand 65.
- 4643 Mac II Stand and Cable Kit 65.
- 2561 MasterPiece Mac II 105.
- 5229 PowerBacker 330 269.
- 5577 PowerBacker 450 339.
- 5578 PowerBacker 520 399.
- 5230 PowerBacker 800 749.
- 5228 PowerBacker 1200 949.

★MacConnection ... 60 day MBG

- 4623 Solid Oak Disk Case, made by New England craftsmen (holds 90 disks) . . 29.

★Mobius Technologies ... 60 day MBG

- 4470 Fanny Mac QT 60.



Targus ... 30 day MBG

Mac SE & Ext. Keyboard Case—Made of a dust & water-resistant material as strong as Cordura but smoother so it won't wear out clothes. Closed cell foam protects against jolts. . . \$75.
ImageWriter II Carry Case 49.

- 4012 High Trek ImageWriter II carry case. 49.
- 4013 High Trek Mac Plus carry case . . . 59.
- 4014 High Trek Mac SE & ext. kybd. case 69.
- 4861 SE Protection Pak (std. keyboard) . . 65.
- 4862 SE Protection Pak (ext. keyboard) . . 75.

★Targus ... 60 day MBG

- 3618 ImageWriter II Carry Case 49.
- 3617 Mac Plus/SE Carry Case 59.
- 4015 Mac SE & Ext. Kybd. Carry Case . . 75.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 to 9:00 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST.

SHIPPING

Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all credit card orders phoned into MacConnection weekdays by 8 PM EST will ship Airborne the same night for delivery the next business day (i.e. not Saturday or Sunday), except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now \$3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery.
Hawaii, Alaska and Outside Continental US: Call 603/446-7711 for information.



Thunderware ... 30 day MBG

Thunderscan 5.0 with Power Port—1989 MacWorld World-Class Award for Digitizer/Scanner. This three time winner turns an ImageWriter into a high-resolution image scanner. \$189.

★Moustrak ... 60 day MBG

Available in blue or gray.

- 2694 Moustrak Pad (standard 7" x 9") . . . 8.
- 2692 Moustrak Pad (large 9" x 11") 9.
- 2693 Moustrak Pad L/F (9" x 11") 10.

★NoRad ... 30 day MBG

- 5620 Shield for Mac Plus or SE (*2524) . . 99.
- 5622 Shield for Mac II (*2523F) 99.

Ribbons

Available in black, blue, brown, gold, green, orange, purple, red, silver and yellow.

- 3255 ImageWriter II Ribbon 4.
- 3261 ImageWriter II 4-Color Ribbon 9.
- 3270 ImageWriter II Rainbow Six Pack . . 20.
- 3260 ImageWriter LQ Black Ribbon 17.
- 4011 ImageWriter LQ 4-Color Ribbon . . . 20.

★Sopris Softworks ... 60 day MBG

- 4171 Mac SE Std. Keyboard Cover (navy) . . 15.
- 4019 Mac SE & Ext. Keyboard Cover (navy) . 15.
- 4016 Mac Plus Cover (navy) 15.
- 4017 ImageWriter II Cover (navy) 11.
- 4168 ImageWriter LQ Cover (navy) 13.
- 4018 LaserWriter II Series Cover (navy) . . 17.



Freelsoft ... 60 day MBG

Red Ryder 10.3—1989 MacWorld World-Class Award for General Communications. Supports MacBinary, Xmodem, Kermit and CompuServe Error Correcting protocols. \$52.

Two 3's, then five 4's:



Microsoft ... 30 day MBG

Works 2.0A—1989 MacWorld World-Class Award for Integrated Packages. Word processor, spreadsheet, database, and communications all in one. Runaway winner with 88% of total votes. \$185.

Koala

2593 MacVision 2.0. 219.

★Kraft Systems ... 60 day MBG

2600 3-Button QuickStick. 39.
4082 3-Button QuickStick ADB. 51.

Kurta

2604 IS ADB 8 1/2" x 11" Tablet. 255.
5161 IS ADB 12" x 12" Tablet. 385.
5162 IS ADB 12" x 17" Tablet. 625.
2605 Cordless 4 Button Cursor. 65.

★Logitech ... 30 day MBG

5082 ScanMan Mac. 349.

★LYNX Computer ... 30 day MBG

1211 LYNX Trackball. 65.
1212 LYNX Trackball ADB. 65.

★Microseeds Pub. ... 60 day MBG

4843 WristMac 1.0. 149.
5018 WristMac Executive 1.0. 199.

★Mobius Technologies ... 60 day MBG

4846 MultiScreen. 315.

★Mouse Systems ... 30 day MBG

2808 A+ Mouse. 63.
2809 A+ Mouse ADB. 83.

★Nutmeg Systems ... 30 day MBG

4849 LCD Interface (Kodak DataShow). 399.
2993 15" Monitor for Mac II. special 799.
2992 15" Monitor for Mac Plus. 999.
2994 15" Monitor for Mac SE. 999.
4002 19" Monitor for Mac Plus. 1349.
4096 19" Monitor for Mac SE. 1349.
5680 19" Monitor for Mac SE30. 1349.
4097 19" Monitor for Mac II. 1349.

Olduvai Software

5138 Read-It! OCR Personal 2.0. 99.
3034 Read-It! OCR 2.1. 249.

★Orange Micro ... 30 day MBG

4488 Grappler Spooler. 39.
3036 Grappler C/Mac/GS 2.0. 79.
4076 Grappler LQ 1.5. 103.
4487 Grappler LS 1.0. 103.

★PTI/DataShield ... 30 day MBG

4845 MacDirector. 109.

SoftStyle

3282 Printworks 3.5 (Dot Matrix). 43.
3281 Printworks 3.0 (Daisywheel). 56.
3283 Printworks 3.6 (HP laser). 85.

Summagraphics

4298 BitPad Plus ADB. 325.

★Thunderware ... 30 day MBG

3648 ThunderScan 5.0 with PowerPort. \$189.
4994 LightningScan. 409.
3645 Mac II Power Accessory. 45.

MEMORY & DRIVES

1 Meg SIMMs. call

★Cutting Edge ... 30 day MBG

3989 800k External Disk Drive (platinum). 149.
5133 20 Meg Hard Drive. 439.
3990 30+ Meg Hard Drive. 499.
3991 45+ Meg Hard Drive. 549.
5275 65+ Meg Hard Drive. 629.
5276 80+ Meg Hard Drive. 739.
5456 45 Meg Removable Drive. 999.

★Dove Computer ... 60 day MBG

1802 Dove Tool Kit. 15.
1801 SCSI Interface/Port. 109.
5103 Mac II Power Pack (includes Marathon 030 32MHz Accelerator, four 1 Meg SIMMs, and RamSnap). 1799.
1807 MacSnap 524E. 189.
1809 MacSnap 524S. 239.
1811 MacSnap 548E. 419.
1812 MacSnap 548S. 479.
1800 MacSnap 25E. 319.
1797 MacSnap Plus 2. 319.
1804 MacSnap 2S. 329.
1805 MacSnap 4S. 639.

ACCELERATOR BOARDS

1793 MaraThon 020 MSE1. 429.
1794 MaraThon 020 MSE2 (1 Meg). 719.
1795 MaraThon 020 MSE3 (math chip). 599.
1796 MaraThon 020 MSE4 (1 Meg/chip). 899.
5192 MaraThon 020 MSE5 (4 Meg). 1269.
5193 MaraThon 020 MSE6 (4 Meg/chip). 1449.
4663 MaraThon 030 Accelerator 32 MHz. 969.
5623 MaraThon Racer. 149.

ACCELERATORS (020) WIETHERNET

5391 FastNet LAN 1. 1125.
5390 FastNet LAN 2 (1 Meg). 1499.
5389 FastNet LAN 3 (math chip). 1349.
5388 FastNet LAN 4 (1 Meg/chip). 1724.
5387 FastNet LAN 5 (4 Meg). 2175.
5386 FastNet LAN 6 (4 Meg/chip). 2399.



Kensington ... 30 day MBG

Turbo Mouse Plus and Turbo Mouse ADB—1989 MacWorld World-Class Award for Input Devices, for the second straight year. Features dual buttons for either hand as well as a removable ball for easy cleaning. each \$109.

Epson

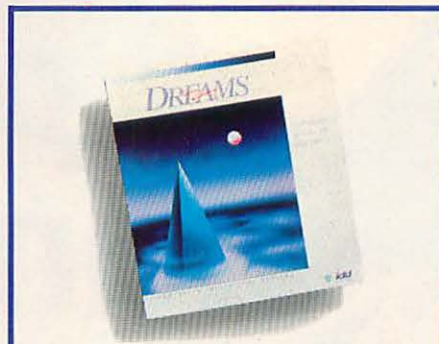
5132 40 Meg Raw Drive (25ms). \$436.
5204 70 Meg Raw Drive (25ms). 586.

IOMEGA

5552 44M Ext. Single Bernoulli II Drive. 1399.
5553 44M Ext. Dual Bernoulli II Drive. 2199.

★Kennect Tech. ... 30 day MBG

5631 Rapport. 219.
5632 Drive 2.4. 359.



Innovative Data Design

Dreams 1.0—All the precision tools of the most popular CAD programs plus merging and subtraction of objects, Bezier and spline curves, custom color patterns, and much more. \$269.

★PCPC ... 30 day MBG

3177 HD-WSI (Apple HD-20 to SCSI). 199.
3189 MacBottom HD 45 SCSI. call
4658 MacBottom HD 84 SCSI. call

★SuperMac Tech. ... 30 day MBG

5452 Dataframe 20. 599.
5447 Dataframe XP 30. 749.
5448 Dataframe XP 60. 1059.
5449 Dataframe XP 100. 1419.

STORAGE MEDIA

Double Sided Disks

★Verbatim ... 30 day MBG

3772 3 1/2" DS/DD Disks. 15.
5035 3 1/2" DS/DD 3 Pak. special 39.
3297 Sony 3 1/2" DS/DD Disks. 15.
2792 MAXELL 3 1/2" DS/DD Disks. 16.

High Density Disks

★Verbatim ... 30 day MBG

3773 3 1/2" HD Disks (1.44 Meg). 32.
3298 Sony 3 1/2" HD Disks (1.44 Meg). 32.
2793 MAXELL 3 1/2" HD Disks (1.44 Meg). 32.

Tape Cartridges

3943 3M DC2000. 25.
3944 3M DC600A. 29.

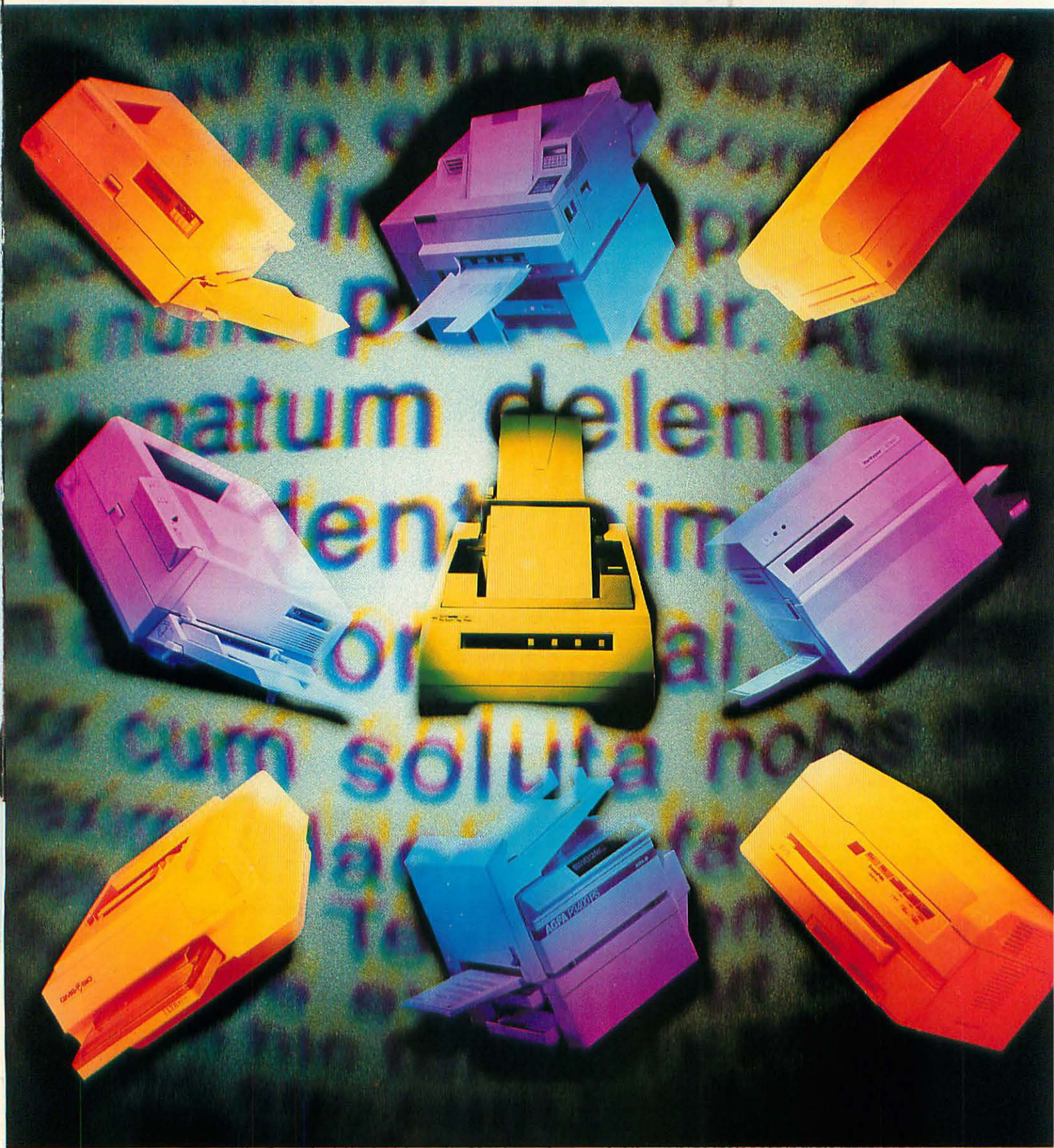
ACCESSORIES

Apple Computer

1116 Black ImageWriter Ribbon. 10.

★Avery ... 60 day MBG

4864 Disk Labels 3 1/2" (Qty. 250). 13.
5392 Disk Labels—Laser 3 1/2" (Qty. 630). 29.
5403 Address Labels 1 7/16" x 4" (Qty. 1000). 9.
4865 Address Labels 3 1/2" x 1 5/16" (Qty. 3750). 15.
4811 Transparencies 8 1/2" x 11" (Qty. 50). 22.



MICHAEL LEWELLYN

Paging All Printers

SIXTEEN MONOCHROME PAGE PRINTERS COMPARED

Which laser printer works best with the Mac? You can't answer that question without asking others: How much can you spend? What kinds of documents do you print? What are your paper-handling needs? And, is it important for the printer to have a small, partially eaten apple on its case?

Price is an obvious first concern. Among the most complex devices in an office, laser printers take a print *engine*, with enough wheels and gears to give Rube Goldberg nightmares, and combine it with a *controller* that often packs more computing punch than the Mac to which it's attached. Hardware this sophisticated is never cheap.

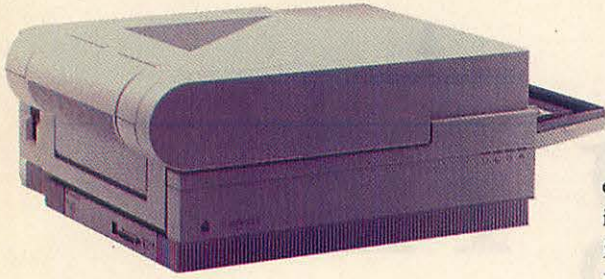
But making the payments can prove easier than finding the right printer for your needs. There are no Lasers-R-Us outlets where you can test a dozen units, and besides, no single printer is up to every challenge. A printer that sizzles when printing Courier-formatted manuscripts might slow to a crawl when printing a desktop published newsletter.

That's where I can help. This article rates ease-of-

installation, paper-handling features, print quality, and performance for 16 monochrome page printers. All but 2 produce 300-dots-per-inch output. Ten are driven by Adobe Systems PostScript interpreters. Two of the remaining 6, Apple's LaserWriter IISC and GCC's Personal LaserPrinter, rely on QuickDraw, the Mac's built-in graphics routines. The last 4—Abaton's QuickStep, Jasmine's DirectPrint, La Cie's Panther PDX, and Qume's CrystalPrint Publisher—are PostScript clones that respond to PostScript language commands without using an Adobe-created PostScript interpreter.

Rather than grouping the printers according to their driving language, however, I have sorted them by a more pragmatic category: cost. I look first at printers priced under \$3000, then at those in the \$3000–\$6000, \$6000–\$8000, and over-\$8000 ranges. Vital statistics for each printer appear in "Printer Particulars," and results of the performance tests are listed in "PostScript Printer Benchmarks" and "QuickDraw Printer Benchmarks." For background on laser

BY JIM HEID

**LaserWriter II**

printers and a look at laser shopping considerations (including a glimpse at Apple's new font outline technology to be included in System 7.0), see "Getting Started with Laser Printers" in this issue.

LEAST EXPENSIVE—UNDER \$3000

The two printers in this category—the Apple LaserWriter IISC and GCC Technologies' Personal LaserPrinter—handle text and graphics differently, but they do share common ground. Unlike the other printers reviewed here, both connect to the Mac's SCSI port rather than using the LocalTalk network and neither can be shared on a network (although you can add network features to the Personal LaserPrinter with GCC's \$499 PLP Share). And both use Apple's QuickDraw. While these printers are the least expensive Mac-compatible laser printers on the market, they're also the least capable, and they tend to have more software compatibility problems than the other printers reviewed here.

Apple LaserWriter IISC The \$2799 Apple LaserWriter IISC uses Canon's 8-pages-per-minute (ppm) LBP-SX print engine, the same engine used in the Apple LaserWriter IINT and IINTX, and in the QMS-PS 810. The SX engine is popular for its high-quality output and easy installation. Pop out a few protective shipping spacers, slide in a disposable print cartridge, and the engine is ready to run.

The print cartridge contains toner powder and the imaging drum and is good for roughly 4000 pages. (A new print cartridge costs \$130, but several companies offer reconditioned cartridges for less.) Because the toner is housed in the disposable cartridge, the risk of spillage is minimal.

The bottom line, however, is that Apple's IISC doesn't exploit the SX engine as well as its PostScript-based cousins. All the other printers reviewed in this article, for instance, contain their own printer fonts. But the IISC, like the ImageWriter, relies on the Mac's screen fonts. To enhance resolution, the IISC's driver looks in the System file for a font four times larger than the required size, and then prints it at one-fourth that size. In order to print 12-point text, for example, the printer needs a 48-point font.

These 4x fonts devour disk space—1.4 megabytes for the complete set of Times, Helvetica, Courier, and Symbol. And the fonts themselves are typographically inferior to outline fonts. Because the IISC has no access to a true italic version of Times, for example, the driver mathematically alters the upright (roman) weight of the font, slanting it to produce an unattractive pseudo-italic. Higher-quality fonts are available from font vendors such as Bitstream and Casady & Greene, but the fact remains that the IISC is not the printer of choice for desktop typography.

The IISC does have the advantage of speed, however. Processing time for bitmapped fonts is much shorter than that required by outline fonts, and the IISC churns out text-oriented documents faster than the Personal LaserPrinter. For files with graphics, however, the gap narrows (see "QuickDraw Printer Benchmarks"). Finally, while you can upgrade a IISC to a IINT or IINTX, the upgrade prices make the total cost more than if you bought an NT or NTX to begin with.

GCC's Personal LaserPrinter Although still inconvenient at times, the Personal LaserPrinter (PLP) from GCC Technologies is a far more capable printer than the IISC. And, at \$2099, it costs \$700 less. (The PLP Plus, which includes 16 additional Bitstream fonts, costs \$2299.)

Like GCC's Business LaserPrinter, Texas Instruments' OmniLaser 2106, and the IBM Personal Page Printer II, the PLP uses the 6-ppm Ricoh 1060 engine. The engine is easy to set up, but it's not as foolproof as the Canon LBP-SX. Instead of simply

sliding a cartridge into place, you must install a drum assembly, a cleaning assembly, and a cartridge containing toner, which is prone to spillage.

Output quality is a bigger problem. While text output is excellent, dark or solid-black graphics tend to print gray and the printer's laser scan lines are clearly visible. (Canon's CX engine, used in the original LaserWriter, shared this flaw.) The Canon LBP-SX engine prints much truer blacks, and its cassettes hold more paper—200 sheets, versus the 1060's 150-sheet capacity.

Like the LaserWriter IISC, the PLP uses QuickDraw language, but the PLP handles fonts using master outlines to generate bitmapped fonts in the required sizes, much as a PostScript printer does. PostScript printers, however, use their own processors and memories for this task, while the PLP uses the Mac's memory. During PLP print jobs, the Mac generates font bitmaps and creates a bitmapped image of the entire page and stores it on a hard disk. The Mac then transmits this full-page bitmap to the printer via the SCSI cable. Consequently, the faster the Mac, the faster the PLP.

Performance also depends on memory. When using a Mac with only 1MB of memory, you often have to print documents in two steps: create a print file, then quit the application and run a special PLP utility. Version 2.0 of the PLP's driver software offers several performance-boosting options, including the ability to use the LaserWriter IISC's 4x fonts; but as a rule, if you have a 68000-based Mac, you'll spend a fair amount of time waiting for this printer.

Patience has its rewards, however. The PLP's fonts are typographically excellent. And because the PLP uses font outlines, it doesn't need a separate screen font for each size and it can produce text in virtually any size. You can upgrade the PLP to the PostScript-based Business LaserPrinter for \$2299.

Recommendations—Under \$3000 Apple's LaserWriter IISC is best suited to outputting typographically simple documents such as manuscripts, legal contracts, and letters. The Personal LaserPrinter is slower and its output lacks the IISC's rich

blacks, but it's better for desktop publishing and other typographic applications. Both printers are prone to occasional incompatibility problems and neither offers the degree of software support that PostScript printers enjoy.

MODERATELY PRICED — \$3000 TO \$6000

This price range contains the largest selection of printers. All are PostScript-based and many use the same engines. These midrange printers are best suited for small-to medium-size offices that don't require high-volume printing.

Apple LaserWriter IINT The best thing about the Apple LaserWriter IINT is that it can be upgraded to a LaserWriter IINTX. This is not to say there is anything actually wrong with the NT; it's just that it is a mediocre performer with a higher price tag than many competing units.

Because it uses the Canon LBP-SX engine, the \$4999 NT enjoys excellent output quality and simple setup. But the NT is slow and, unlike many of its peers, it offers no memory-expansion upgrades that would boost performance and downloadable font capacity. The Apple LaserWriter IINT is an uninspiring performer with no expansion capabilities; the QMS-PS 810 is faster and more expandable—and it costs four bucks less.

GCC's Business LaserPrinter On the other hand, GCC's \$4199 Business LaserPrinter (BLP) is easy to like. Not only is it one of the least expensive true Adobe PostScript printers, it includes something usually found only on more expensive printers: a SCSI port that lets you attach a hard disk, which can hold downloadable fonts and character bitmaps that have been generated from font outlines. Unlike Apple's printers, it also offers a Centronics parallel port for use with IBM PCs. And the BLP can be upgraded to 3MB of memory.

If I had my druthers, the BLP would

use a Canon engine instead of a Ricoh, but the 1060 engine isn't that bad. The text output is first-rate even if the black areas do print gray. The BLP performed quite well on the newsletter test, but its slower engine did prove a liability in the Courier document test.

IBM's Personal Page Printer II An IBM product reviewed in *Macworld*? If that surprises you, listen to this: it's not a bad printer. One point in its favor is its 16MHz 68000 microprocessor; most of the other 68000-based printers reviewed here run at 10MHz or 12MHz.

As the Roman numerals imply, the \$4999 Personal Page Printer II is IBM's second PostScript printer. The first didn't work with Macs and it worked awkwardly with IBM PCs. This time, Big Blue got it right. The Personal Page Printer II has the controller board housed within the printer; unlike its predecessor, it no longer requires a plug-in PC expansion board. And it contains an AppleTalk port that IBM claims is "for use in mixed environments." We all know what that means.

While the Ricoh 1060 engine is standard, the Personal Page Printer's controller definitely sets this printer apart. Not only does it have a faster processor, the Personal Page Printer comes with 43 fonts. (Most PostScript printers come with 35.) The Helvetica Narrow family is missing, but all the other fonts in the classic LaserWriter Plus mix are there, plus: ITC Korinna, ITC

Garamond Light, Helvetica Black, and Helvetica Light with oblique—all popular typeface families that many users buy in downloadable form. Not surprisingly, IBM does not include Macintosh screen fonts for the extra fonts. They are available from Adobe Systems, however.

For extra versatility when used with PCs, the Personal Page Printer II can emulate both the Hewlett-Packard LaserJet Plus and the IBM ProPrinter XL dot-matrix printer. A 2MB memory upgrade is available to boost total RAM to 4MB.

While the Personal Page Printer II officially bears a \$4999 price tag, it often sells for less. (I've seen it as low as \$3950.) And remember those extra fonts. A \$555 value, they take up no hard disk space, and they don't need to be downloaded.

NEC SilentWriter LC 890 The NEC SilentWriter LC 890 finished poorly in nearly every benchmark, and it had the slowest processor speed (10MHz) of any PostScript printer reviewed here. It's down for the count, right? Wrong. Dramatic discounts offered by numerous computer mail-order houses make this printer very attractive. The LC 890 lists for \$4795, but since it has been around for awhile in the DOS world, I quickly checked through issues of *PC World* and *PC* magazines and turned up three companies selling the printer for \$3199. I don't know of a cheaper way to put a PostScript printer on a desktop.

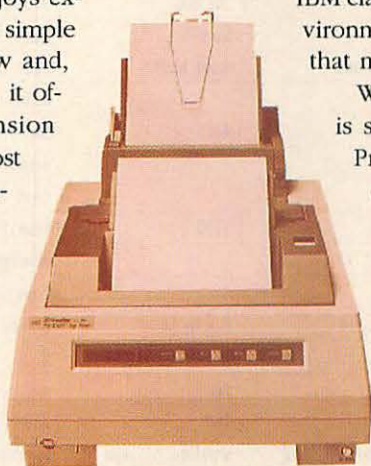
The LC 890 is one of the few PostScript printers to use an engine built by the printer's manufacturer. Rather than a laser, the NEC 890 engine uses a bank of light-emitting diodes (LEDs) to create images. (See "Getting Started with Laser Printers" in this issue for background information on nonlaser print technologies.) The engine produces deep, rich blacks, and it does an excellent job of rendering fine lines and delicate serifs. Setup isn't as easy as it is with a Canon LBP-SX, but it isn't grueling, either.

The LC 890's other strengths include a copious paper capacity—two 250-sheet paper hoppers, and an illuminated liquid-crystal display that conveys status information. The printer also comes with 3MB of RAM, providing more room for downloadable fonts.

Unfortunately, the extra memory can't make up for the controller's laggardly performance. The only test in which this printer did well was the Courier manuscript test, in which it kept pace with even the LaserWriter IINTX.

If you generally print documents that are typographically simple and you don't mind spending time to save money, the SilentWriter LC 890 might be the printer for you. But be sure to shop around for the best price.

QMS-PS 810 The \$4995 QMS-PS 810 is



NEC SilentWriter LC 890

PRINTER PARTICULARS

Agfa Compugraphic's
Agfa P3400PS

Apple
LaserWriter IINT

Apple
LaserWriter IINTX

Apple
LaserWriter IISC

Dataproducts'
LZR-1260

GCC'S Business
LaserPrinter

CONTROLLER SPECIFICATIONS

Imaging language	PostScript 48.1	PostScript 47	PostScript 47	QuickDraw	PostScript 47	PostScript 49.2
Imaging location	printer	printer	printer	Macintosh	printer	printer
Processor	68020, 16MHz	68000, 12MHz	68020, 16MHz	68000, 7.45MHz	68020, 16MHz	68000, 12.5MHz
Font mechanism	outline	outline	outline	bitmapped	outline	outline
Font location	printer	printer	printer	Macintosh	printer	printer
Built-in fonts	73	35	35	0	31	39
Accepts font-expansion hardware	no	no	yes	no	no	no
Hard disk for font storage	included	no	optional	no	optional	no
Bitmap smoothing	no	yes	yes	yes	no	no
Requires hard disk—equipped Mac	no	no	no	recommended	no	no
Works with Mac 512K/512KE	yes	yes	yes	no	yes	yes
Amount of RAM	6MB	2MB	2MB	1MB	4MB	2MB
RAM expansion upgrades	none	none	to 12MB	none	none	to 4MB
Other controller upgrades	none	to IINTX (\$2099)	none	to IINT (\$2099) or IINTX (\$2699)	none	none
Size of font cache	10MB ³	200K	200K–1200K ⁵	n/a	400K	230K
Interfaces ⁴	A, P, R	A, ADB, R	A, ADB, R, SCSI	ADB, SCSI	A, P, R	A, P, R
Emulation modes	Diablo 630, HP LaserJet Plus	Diablo 630	Diablo 630, HP LaserJet Plus	none	Diablo 630, HP LaserJet Plus	none

ENGINE SPECIFICATIONS

Print engine	Minolta SP-100	LBP-SX	LBP-SX	LBP-SX	Toshiba A-739	Ricoh 1060
Resolution (in dpi)	400	300	300	300	300	300
Rated engine life (in pages)	600,000	300,000	300,000	300,000	600,000	180,000
Writes white or black	black	black	black	black	black	black
Consumable components	toner, developer, imaging unit	drum, toner	drum, toner	drum, toner	toner, developer, drum	toner, drum, cleaning magazine
Pages between replacement	toner, 1000; developer, 30,000 imaging unit, 30,000	4000	4000	4000	toner, 5000; developer, 40,000; drum, 25,000	toner, 1500; drum, 20,000; cleaning magazine, 10,000
Price for replacement	toner, \$60 (3 tubes); developer, \$60; imaging unit, \$660	\$130	\$130	\$130	toner, \$25; developer, \$225; drum, \$295	toner, \$29; drum, \$110; cleaning magazine, \$89
Maximum paper size (in inches)	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14
Number of paper trays	2	1	1	1	3	1
Self-centering manual feed	no	yes	yes	yes	yes	yes
Paper tray capacity (in sheets)	each tray 250	200	200	200	250	150
Optional paper accessories	legal cassette	envelope, A4, legal cassettes	envelope, A4, legal cassettes	envelope, A4, legal cassettes	envelope cassette, two-bin feeder	none
List price	\$12,500	\$4999	\$6999	\$2799	\$7995	\$4199
Weight (in pounds)	102	45	45	45	100	37

² Specifications also apply to Abaton QuickStep (\$4495), Jasmine DirectPrint (\$3495), and La Cie Panther PDX (\$3499, including Casady & Greene downloadable font library).

³ The VT600 (\$17,000) has a maximum paper size of 8 1/2 by 14.

⁴ The PLP includes Times, Helvetica, Symbol, Courier, Zapf Calligraphic (a Palatino look-alike), and Helvetica Narrow; the Fonts Plus package adds

Avant Garde, Bookman, Century Schoolbook, Zapf Dingbats, Zapf Chancery, Cooper Black, and Futura Extra Black.

much faster than the LaserWriter IINT and slower than the IINTX. If you want the setup simplicity and print quality of the Canon LBP-SX engine, and you can't afford the top-of-the-line IINTX, consider the PS 810.

Like the IBM printer, the QMS-PS 810 contains a 68000 microprocessor running at 16MHz. This fact, combined with QMS's

proprietary font-handling techniques, helped the PS 810 finish first among the true Adobe PostScript printers in the font-oriented benchmarks. IBM's Personal Page Printer edged it out in the FreeHand test, however.

The PS 810 provides a complete set of emulation modes and a Centronics parallel port for IBM PCs. It arrives with 2MB of

RAM, and a 1MB memory expansion option is also available. In all, it's a fine printer. A recent price cut from \$5495 to \$4995 makes it the obvious choice over the LaserWriter IINTX.

Four PostScript Clones Abaton QuickStep, Qume CrystalPrint Publisher, Jasmine DirectPrint, and La Cie Panther PDX are quick, moderately priced printers that

GCC's Personal LaserPrinter	IBM's Personal Page Printer II	NEC SilentWriter LC 890	QMS-PS 810	Qume's CrystalPrint Publisher*	Texas Instruments' OmniLaser 2106	Varityper's VT600W†
QuickDraw	PostScript 50.5	PostScript 47	PostScript 47	HyperScript 2.02	PostScript 47	PostScript 48
Macintosh	printer	printer	printer	printer	printer	printer
none (imaging occurs in Mac)	68000, 16MHz	68000, 10MHz	68000, 16MHz	RISC (Weitek)	68000, 10MHz	68020, 16MHz
outline	outline	outline	outline	outline	outline	outline
Macintosh hard disk	printer	printer	printer	printer	printer	printer
†	43	35	35	35	35	35
no	no	no	no	no	yes	no
no	no	no	no	no	no	included
yes	no	no	no	no	no	no
yes	no	no	no	no	no	no
no	yes	yes	yes	yes	yes	yes
none	2MB	3MB	2MB	3MB	2MB	6MB
none	to 4MB	none	to 3MB	none	none	none
to Business LaserPrinter;	none	none	none	none	none	none
PLP Share network interface						
varies (in Mac's memory)	238K†	400K	279K	130K‡	286K	10MB§
SCSI	A, P, R	A, P, R	A, P, R	A, P, R	A, P, R	A, P, R
none	HP LaserJet Plus, IBM ProPrinter XL	Diablo 630, HP LaserJet Plus	Diablo 630, HP LaserJet Plus, HPGL plotter	none	Diablo 630, HP LaserJet Plus, HPGL plotter, Texas Instruments 855	none
Ricoh 1060	Ricoh 1060	NEC 890	LBP-SX	Casio LCS-130	Ricoh 1060	(undisclosed)
300	300	300	300	300	300	600
180,000	180,000	600,000	300,000	300,000	180,000	360,000
black	black	black	black	black	black	black
toner, drum,	toner, drum,	toner, drum	toner, drum	toner, drum	toner, drum,	toner, developer,
cleaning magazine	cleaning magazine				cleaning magazine	drum
toner, 1500;	toner, 1500;	toner, 3000;	4000	toner, 6000;	toner, 1500;	toner, 2000;
drum, 20,000;	drum, 20,000;	drum, 7000		drum, 10,000	drum, 20,000;	developer, 30,000;
cleaning magazine, 10,000	cleaning magazine, 10,000				cleaning magazine, 10,000	drum, 30,000
toner, \$29; drum, \$110;	toner, \$31.75;	toner, \$20;	\$130	toner, \$99; drum \$129	toner, \$29; drum, \$110;	toner, \$108 (for
cleaning magazine, \$89	drum, \$218;	drum, \$110			cleaning magazine, \$89	12,000 pages); developer,
	cleaning magazine, \$108					\$149; drum, \$785
8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	8 1/2 by 14	11 by 17
1	1	2	1	1	1	1
yes	yes	no	yes	no	yes	yes
150	150	each tray, 250	200	100	150	200
none	none	face-up output tray	envelope, A4, legal	none	250-sheet feeder	A4, B4, legal cassettes
			cassettes			
\$2099 (Plus, \$2299)	\$4999	\$4795	\$4995	\$4499	\$4595	\$22,995
37	37	68	45	35	37	161

§ The size of these printers' font caches increases as memory is expanded. The value listed reflects the size of the font cache with base memory configuration.

‡ The CrystalPrint Publisher's font cache operates differently from that of a PostScript printer, so this figure shouldn't be used as a point of comparison.

* Interfaces: A = AppleTalk; R = RS-232C serial; ADB = Apple Desktop Bus;

C = Centronics parallel; SCSI = small computer system interface.

bypass Adobe Systems' PostScript interpreters. Qume's CrystalPrint Publisher, which sells for \$4499, is the first mass-market PostScript clone available. Jasmine and La Cie sell the same printer for about \$1000 less; La Cie throws in Casady & Greene's entire library of downloadable fonts. Abaton recently announced its own Qume printer, the Abaton QuickStep,

which retails for \$4495.

Like the NEC SilentWriter, the CrystalPrint Publisher doesn't use a laser. Within its Casio LCS-130 engine, thousands of liquid-crystal shutters open and close, allowing light from a halogen lamp to illuminate the photosensitive print drum. Setup is straightforward although, once again, somewhat prone to toner spillage.

Output quality is excellent, and black areas print beautifully.

The CrystalPrint Publisher's paper-handling features, however, are minimal. The paper tray holds only 100 sheets, and there is no manual feed slot for envelopes or nonstandard paper sizes.

In speed tests, this printer usually left the others in the dust. However, in the

POSTSCRIPT PRINTER BENCHMARKS

(All times are in seconds)



<i>Apple LaserWriter IINT</i>
<i>GCC Business LaserPrinter</i>
<i>IBM Personal Page Printer II</i>
<i>NEC SilentWriter LC-890</i>
<i>QMS-PS 810</i>
<i>Qume CrystalPrint Publisher Super Script*</i>
<i>Texas Instruments OmniLaser 2106</i>
<i>Apple LaserWriter IINTX</i>
<i>DataProducts LZR-1260</i>
<i>Agfa P3400PS</i>
<i>Varityper VF600W</i>

* Results also apply to Abaton QuickStep, Jasmine DirectPrint, and La Cie Panther PDX.

TESTING PAGE PRINTERS

To measure the performance of the printers reviewed here, I created four benchmark documents for the PostScript printers and three for the QuickDraw printers, each of which tests a different aspect of a printer's performance.

In the lowest-priced category, the IISC prints text-oriented documents faster than the PLP, especially when used with a 1MB SE. With complex graphics, the PLP was faster.

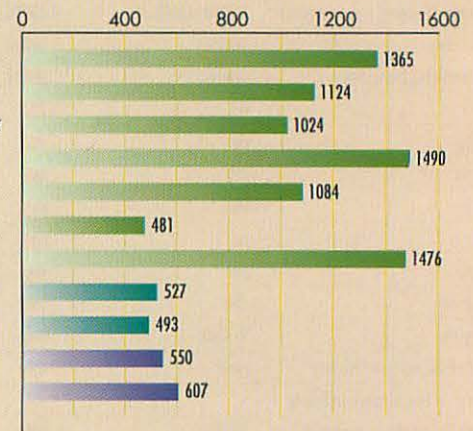
Qume's CrystalPrint Publisher won the FreeHand and Fonts events easily in its category. (Do recall, though, that it frequently crashed during the latter.) Its 10-ppm engine held it back during the Courier tests, and the scanned images slowed it down during the Newsletter test (Adobe interpreters are especially adept at dealing with large bitmaps). Of the 68020-based printers, DataProducts' LZR-1260 was the all-around performance champion. The Apple LaserWriter IINTX edged it out by a negligible five seconds in the Newsletter test. The Agfa Compugraphic and

Varityper printers turned in faster times in the Fonts test, but they had the benefit of a hard disk. The 12-ppm engines in the DataProducts and Agfa Compugraphic printers drove them to a first-place tie in the Courier test.

As for the midpriced printers, GCC's Business LaserPrinter, IBM's Personal Page Printer II, and the QMS-PS 810 share the winner's circle. (The CrystalPrint Publisher beat all three printers, but its unreliability puts it out of the running.) The NEC SilentWriter ran like a turtle in all but the Courier test, when its 10-ppm engine pushed it to a first-place victory in its class.

I ran the QuickDraw tests on a 1MB SE and on a 5MB Mac II, with MultiFinder, disk cache, and background printing disabled. All the PostScript tests were performed using a 2MB Mac II running System 6.0.2 (with version 5.2 of the LaserWriter drivers), with MultiFinder and cache disabled. I ran each test three times; the graphs show the averaged results of the second and third times.

FREEHAND TEST



The FreeHand test measures the time required to print an Aldus FreeHand 2.0 document (the Motorcycle sample file). This document tests the printer's ability to process the kind of complex PostScript images that Aldus FreeHand and Adobe Illustrator users create.

QUICKDRAW PRINTER BENCHMARKS

(All times are in seconds)

Because of the text and graphics limitations of the QuickDraw-based LaserWriter IISC and the Personal LaserPrinter, I used a different set of benchmark documents to test these units.

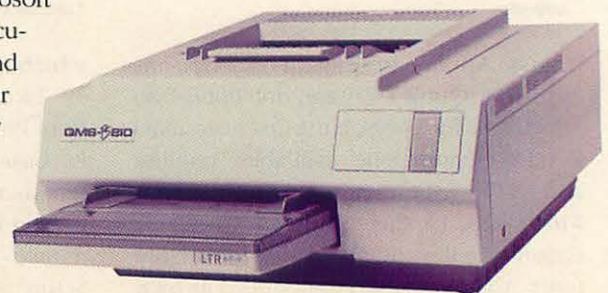
Under \$3000

<i>LaserWriter IISC</i>	Mac II
	Mac SE
<i>Personal Laser Printer</i>	Mac II
	Mac SE

Fonts document heat it crashed into the wall. While a document would generally print properly the first time (and in the FreeHand and Fonts tests, quite quickly), on subsequent runs the printer would hang and I would have to shut it off. Occasionally, the document wouldn't print at all. This problem also occurred with the Jasmine and La Cie units, so it wasn't an isolated flaw in Qume's review unit.

A Qume representative said the prob-

lem was related to the way Microsoft Word 3.02 and 4.0 format documents for a PostScript printer, and that the problem doesn't occur with WordPerfect 1.0.2 or MacWrite 5.0. Qume promises that version 3.0 of the printer's firmware, which should be released by the time you read this, will fix the problem. For upgrade availability and pricing,



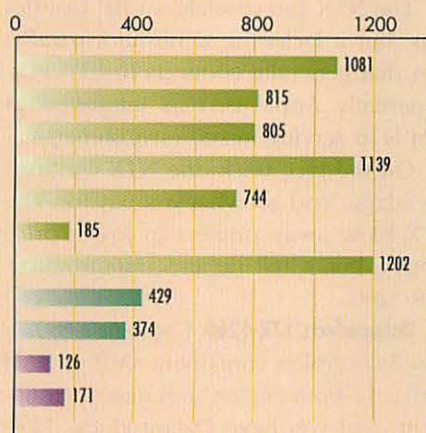
QMS-PS 810

COURIER TEST



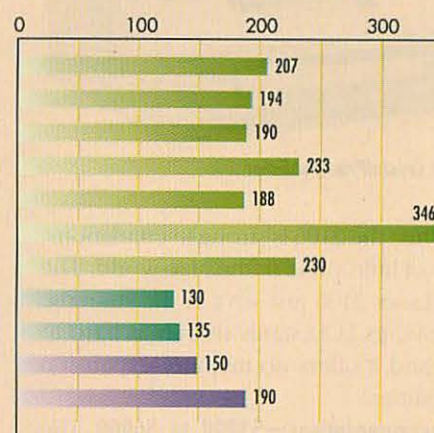
The Courier test measures the time required to print a 20-page, double-spaced Microsoft Word 4.0 document containing Courier with some bold and underlined text. This test doesn't make extensive demands of a printer's controller; indeed, it's the only test whose results depend largely on the speed of the print engine.

Fonts TEST



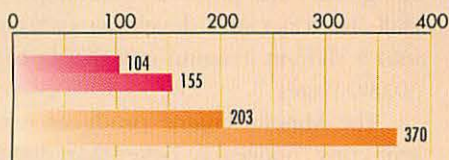
The Fonts document is a 7-page Word 4.0 document that contains the entire Macintosh character set in numerous fonts, sizes, and styles. This test measures a printer's ability to generate font bitmaps and to store and retrieve them from the font cache. It was this test that tripped up Qume's CrystalPrint Publisher and its Abaton, Jasmine, and La Cie counterparts.

NEWSLETTER TEST



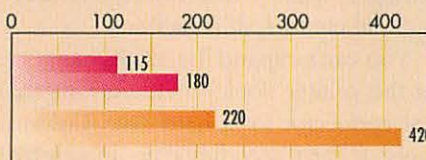
The Newsletter document is a 2-page Aldus PageMaker 3.0 document containing four downloadable fonts, three gray-scale scanned images, and a mix of font sizes and styles. Because the Qume CrystalPrint Publisher can't use Adobe fonts, I substituted Bitstream downloadable fonts in their place when testing the Qume, Abaton, Jasmine, and La Cie printers.

COURIER TEST



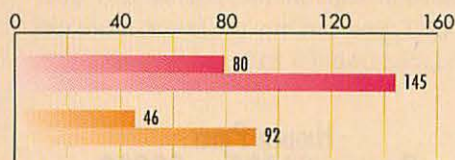
The Courier document created for the QuickDraw printers, like the one used with the PostScript printers, tests the speed of the print engine. This document contains 10 pages.

COMPLEX DOCUMENT TEST



The Complex document was created in Word 4.0 and, like many newsletters and other desktop-published documents, it contains bitmapped graphics and several type sizes.

MACDRAW TEST



The MacDraw document was designed to test the printers' ability to work with complicated object-oriented documents. This one contains 960 objects.

check with the company whose name appears on the printer.

Another shortcoming is the CrystalPrint Publisher's inability to use Adobe's vast library of top-notch downloadable fonts. Only an Adobe interpreter can read the encrypted format. You can use downloadable fonts from other sources, including Bitstream and Casady & Greene, but because character widths may not match Adobe's equivalents, you could run into

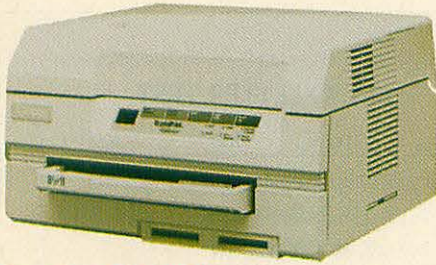
problems if you use the printer to proof documents and then have the final output printed by a service bureau that uses Adobe fonts.

I successfully used Bitstream downloadable fonts with the CrystalPrint Publisher, but the font quality was poor in small sizes (12-point and smaller).

If the CrystalPrint Publisher cost less than \$3000, it might be a serious contender. As it stands, it's too expensive, espe-

cially given its occasional crashing, its inability to use Adobe fonts, and its spartan paper-handling features. The first wrinkle is the only one likely to be ironed out.

Texas Instruments' OmniLaser 2106 The \$4595 OmniLaser 2106 proved quite slow in nearly every test. The fact that the 2106 contains the same Ricoh 1060 engine as the GCC and IBM printers illustrates the difference that a controller can make in performance.

**Qume's CrystalPrint Publisher**

While the 2106 is strong in emulations, this is of little value in the Mac world. The OmniLaser 2106 just isn't in the running. It's slow, its LCD status display is hard to read, and it offers no memory-expansion capabilities.

Recommendations—\$3000 to \$6000 The winners in this class are GCC's Business LaserPrinter and IBM's Personal Page Printer II. Both deliver good performance and memory-expansion capabilities, plus some unexpected extras. GCC offers the SCSI port. IBM offers extra fonts. GCC has the price advantage.

Printers to avoid include Qume's CrystalPrint Publisher, which is fast but flawed, and Texas Instruments' sluggish OmniLaser 2106. The Apple LaserWriter IINT is an uninspiring performer with no expansion capabilities. For \$4 less than the IINT, you can buy the faster, more expandable QMS-PS 810.

HIGHER PRICE RANGE—\$6000 TO \$8000

Several years ago, this price range represented the low end of the Mac laser printer spectrum. Today, it houses the upper tier of 300-dpi printers. Fast and expandable, the printers in this class are designed to accommodate high-volume and processor-intensive printing tasks.

Apple LaserWriter IINTX Apple's best printer, the \$6999 LaserWriter IINTX combines a high-performance controller with the popular Canon LBP-SX engine. This is an excellent combination, unless you routinely print large documents or multiple copies of a single document. The 8-ppm Canon engine can't always keep up with the printer's 68020-based controller.

The NTX is eminently expandable. You can boost its RAM to a nearly absurd 12MB, and the printer contains a SCSI port

for a hard disk. The NTX also accepts plug-in font boards, although none are currently available for it.

The NTX can emulate an HP LaserJet Plus, but it lacks the Centronics parallel port that generally connects to IBM PCs. Apparently Apple isn't as interested as IBM is in serving mixed environments.

On the race track, the NTX confirms the adage, You get what you pay for. The NTX blew away printers in lower price ranges, but it fell behind Dataproducts' LZR-1260.

Dataproducts' LZR-1260 Combine a 68020-based controller containing 4MB of RAM with a 12-ppm engine as standard equipment, and you have Dataproducts' LZR-1260. At \$7995, the 1260 costs more than a IINTX, but the 1260 is faster and better suited to the demands of high-volume printing.

The 1260 uses a heavy-duty Toshiba A-739 print engine, rated at 25,000 pages per month. (The IINTX's Canon LBP-SX engine is rated at only 3000 pages per month.) The Toshiba engine does require more setup effort than a Canon LBP-SX; you must install a disposable drum, developer cartridge, toner cartridge, and fuser cartridge. Wear work clothes, because you're likely to spill something.

You can't expand the 1260's memory, but the printer does provide an internal SCSI connector for a hard disk. Unfortunately, it can't accommodate an external SCSI drive such as Apple's Hard Disk 20SC. Dataproducts says most internal SCSI drives will work with the 1260, and the company sells a 20MB drive for \$895.

The 1260's Toshiba engine handles paper better than a bank teller. The standard cassette holds 250 sheets; an optional two-tray feeder with a 500-page capacity sells for \$895; and an envelope feeder that holds 100 envelopes costs \$995. Print quality is excellent.

The 1260 finished all but one performance test ahead of the IINTX. In the Courier manuscript test, the 1260 was roughly 50 percent faster than the IINTX.

Recommendations—\$6000 to \$8000 Both printers in this class are excellent, but Dataproducts' LZR-1260 offers superior

paper handling, faster performance, and a workhorse of an engine. It is best in environments that require high-volume printing. The IINTX isn't completely out of the running, however. I recommend it for offices that print limited numbers of complex documents.

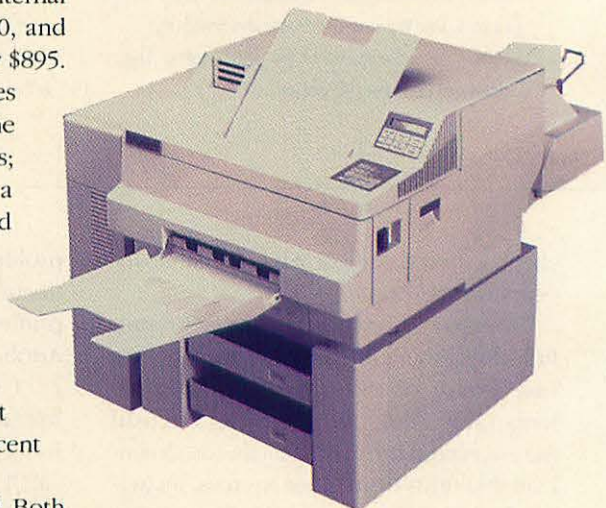
HIGHEST PRICED—OVER \$8000

What do you get when you spend more than \$8000 for a laser printer? For starters, standard equipment includes lots of memory and a built-in hard disk. But more important, output prints at more than 300 dpi. The printers in this class blur the boundaries between laser printer and typesetter.

Agfa Compugraphic's Agfa P3400PS The P3400PS is a 400-dpi printer that packs 6MB of RAM, a 20MB hard disk containing 73 Adobe fonts, and excellent paper-handling features into a remarkably compact package.

The P3400 uses a Minolta SP-100 print engine that can handle 12 ppm and 10,000 pages per month. Once you and a few friends heft the 102-pound printer from its wooden packing palette, setup is a straightforward process. You simply install the toner and developer cartridges into a slide-in imaging unit that lasts for 30,000 pages.

The Minolta engine produces excellent copy, noticeably better than 300-dpi output, although solid black areas could

**Data Products' LZR-1260**

be darker. The printer offers two paper trays; each one holds 250 sheets. You can configure the printer to treat both trays as one 500-sheet tray; when one tray empties, the printer switches to the other. The P3400PS is an excellent performer. Its internal hard disk helped it finish first with the Fonts document. It fell behind in the FreeHand and Newsletter tests, but keep in mind that the 400-dpi P3400PS must manipulate more memory to create a page than does its 300-dpi competitors.

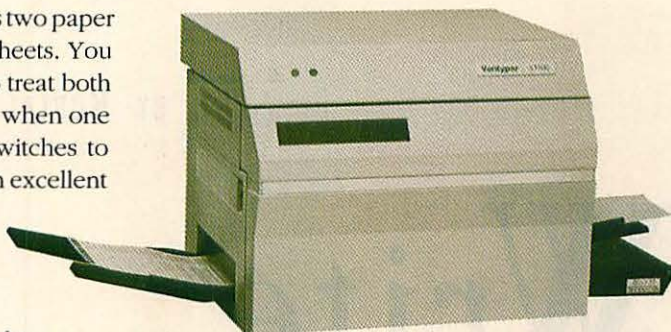
Varityper VT600/VT600W The \$22,995 VT600W is the senior sibling to Varityper's \$17,000 VT600. They are identical except for their maximum paper size; the VT600 prints up to 8½ by 14 inches, while the VT600W can print 11-by-17-inch documents. We performed all tests on a VT600W.

Varityper doesn't disclose the manufacturer of the print engines, but those in the know say it's Panasonic. The engine is rated at only 3000 pages per month, versus the 10,000-page duty cycle of Agfa Compugraphic's P3400, and the Varityper engine provides just one paper cassette. Setup is easy because you don't have to do it; the printer must be installed by a Varityper service representative.

The VT600W includes only the standard 35 fonts found in most PostScript printers. A 20MB internal hard disk is standard, but unlike that of the Agfa P3400PS, it arrives nearly empty. Also unlike the P3400, the VT600W provides no emulation modes. That isn't surprising, however, considering that this printer is billed as a plain paper typesetter, not an office laser printer.

As for the printer's output, it's gorgeous. The 600-dpi resolution is stunning, and solid black areas really are solid black. Performance is excellent, too. The VT600W is slightly slower than the P3400PS, but that is to be expected given the extra memory the controller must manipulate to create 600-dpi output.

Recommendations—Over \$8000 Among the true Adobe PostScript printers reviewed in this article, the Agfa P3400PS is the all-around performance champion. And it's



Varityper VT600W

the better value in this upper stratum, delivering more fonts, better performance, and superior paper handling, all with a price tag \$4500 lower than the VT600's. Still, although the P3400's output quality is superior to that of any 300-dpi printer, the VT-600's is far superior to all of the printers reviewed here. Thus, the Varitypers are better suited to printing final output, while the P3400 is preferable for high-volume proofing and low-end typesetting applications.

PARTING THOUGHTS

The printers reviewed here aren't the only ones available. Some alternatives you might consider are

- **TurboLaser/PS Plus 3 (\$5695)** This printer uses a write-white Ricoh 4081 engine that produces deep, rich blacks, but can print small text very dark. The engine is rugged, however, and the controller's 3MB of RAM help provide good performance.
- **NewGen Systems' TurboPS/300 (\$5495) and TurboPS/400 (\$6495)** These PostScript clones are built around Canon's LBP-SX engine and should be shipping by the time you read this. The TurboPS/400 will be the first midpriced 400-dpi printer. Both units contain 35 Bitstream fonts.
- **QMS-PS 820 (\$6495)** The PS 820 contains the same controller as the PS 810, but uses Canon's heavier-duty TX engine, which provides two paper cassettes and is rated for 10,000 pages per month. Another QMS offering, the PS 1500 (\$7995) uses the 15-ppm Ricoh 4150, a write-white engine that produces excellent blacks, but has trouble with small text and fine lines (as does Ricoh's 4081). The PS 1500's controller contains a 16MHz 68020 and

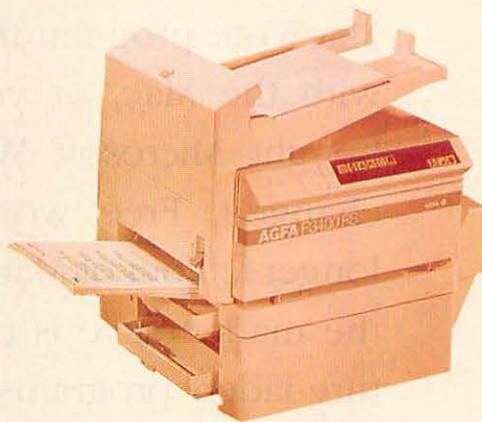
accepts a SCSI hard disk.

▪ **Qume ScriptTen (\$5595)** This pastel-colored fugitive from a *Miami Vice* set contains an Adobe PostScript interpreter, 3MB of RAM, and a 10-ppm engine. The printer uses a write-white Hitachi engine that produces excellent blacks, but still handles small text and fine lines well.

▪ **Canon** is expected to announce its own PostScript printer late this year.

Finally, while I've presented buying recommendations for each price range, your choice of a printer may be influenced by other factors. For example, if you live in a rural area, you may be closer to an Apple dealer than to a Dataproducts regional service office. In such a case, an Apple printer may be a smarter buy, since service and supplies will be easier to obtain. Similarly, if you work in a corporation that has a service contract with IBM, an IBM printer may be the more sensible purchase.

Before making a final decision, consult the benchmark results in "PostScript Printer Benchmarks" and "QuickDraw Printer Benchmarks" to learn how each contender fared when printing the types



Agfa P3400PS

of documents you print. And shop around, because many dealers and mail-order houses sell the printers reviewed here for prices well below suggested retail. ■

See *Where to Buy* for contact information

.....
Jim Heid is a Macworld contributing editor and columnist. He would like to thank Maryellen Kelly for her benchmarking assistance.

Write,

BY ROBERT C. ECKHARDT

Write,

Write

*L*ike the television in the family room or the car in the garage, a word processing program lurks in nearly every Mac owner's software library. Choosing a word processor used to be easy—either you stuck with the MacWrite program that came bundled with the Mac, or you went out and bought Microsoft Word. Times have changed. Free word processors no longer fall out of Macintosh boxes, and the marketplace is crowded with feature-laden programs, each touting its own strengths and special attributes.

Deciding which word processor best meets your needs can be frustrating. There are dozens of concerns, but the first question you might ask yourself is whether you would benefit most from

*A comparative
review of three
midrange
word processors:
MacWrite II,
Microsoft Write 1.0,
and WriteNow 2.0*



a simple, straightforward low-end program or whether you really need a more expensive, higher-end word processor.

WHY NOT THE BEST?

Top-of-the-line programs like Microsoft Word and FullWrite Professional are flex-

ible, and they are especially useful for working with long and complex documents. Besides offering the user thesauruses, glossaries for automated text entry, and style sheets for automatic formatting, high-end programs also provide tools for generating indexes and tables of contents. While these features may prove indispens-

able to the authors of textbooks, legal contracts, and environmental impact statements, not everyone benefits from all these enhancements.

Many word processor users pay a premium price for features they don't need. If you simply want to compose memos, letters, or monthly reports to the

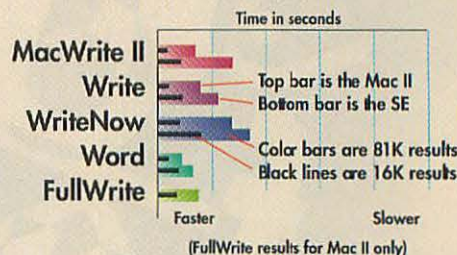
SPEED TESTS

Speed isn't everything, but for a writer who spends a great deal of time at the keyboard, it is far ahead of anything in second place. To test just how fast Write, MacWrite II, and WriteNow 2.0 really are, I subjected the three programs to six standard speed trials. I used two different documents and two Macintosh systems. For purposes of comparison, Microsoft Word 4.0 and FullWrite 1.1 were included in the tests.

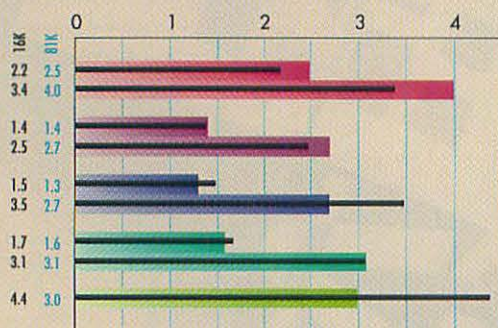
First I created two test documents in MacWrite 5 (precursor to MacWrite II). Both documents were set in Palatino Roman and otherwise contained no special paragraph or character formatting. One document occupied 81K of disk space, contained two bitmapped and two PICT graphics files, and was approximately 34 pages in length. The other document occupied 16K of disk space, contained no graphics, and was about 7 pages long. I used a Macintosh II with 5MB of RAM, an 80MB hard disk, and an Apple color monitor in 2-bit, black-and-white mode in one test environment.

In these tests, each word processor was assigned a 1MB MultiFinder partition. The other test system consisted of a Macintosh SE with 1MB of RAM and two 800K floppy disk drives, with MultiFinder turned off. I conducted each test three times and averaged the results.

KEY

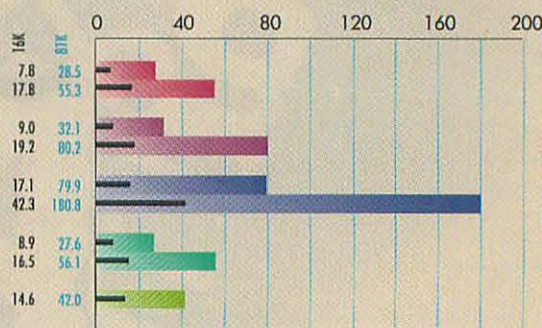


OPEN DOCUMENT



This graph shows the amount of time it took to open each test document.

CONVERT FROM MACWRITE



This graph shows how long it took each program to convert the original MacWrite 5 file to the program's native format and display each document on screen. FullWrite continued to format out-of-view pages long after the document was displayed and the stopwatch was clicked off; Microsoft Word and Write documents were unpaginated at the conclusion of the conversion.

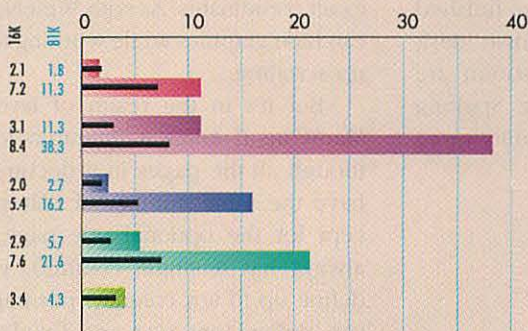
boss, you will waste time and patience learning the intricacies of the higher-end programs. Even seasoned authors may not relish navigating through all the options in the menus and dialog boxes, and the enhancements to some of these programs often make them run more slowly than their simpler cousins. (You can re-

duce the number of options in Microsoft Word, however, by choosing the Short Menus command, and in galley view, Word tested as fast or faster than most of the simpler programs—see “Speed Tests.”) And finally, programs that are more fully featured are generally too large to work conveniently (or, in the case of FullWrite,

at all) on a floppy-based system.

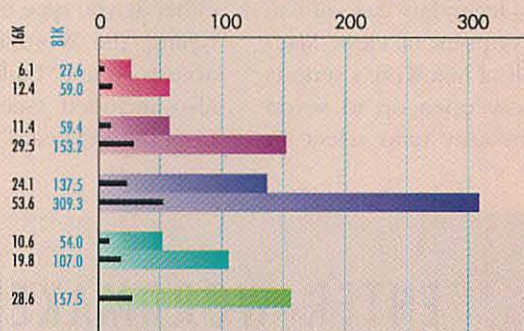
For those who do decide to choose a lower-end word processor, there are currently three that warrant serious attention. MacWrite II, from Claris Corporation, is a major overhaul of the venerable, now retired, original MacWrite. T/Maker's WriteNow 2.0 is a perennially popular program

SAVE DOCUMENT



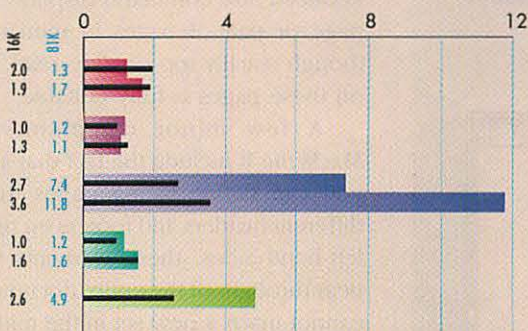
This graph shows how long it took each program to save the test document as a new file using the Save As command. Although it doesn't really have an effect on the initial save, the Fast Save option in both Word and Write was turned off.

SCROLL TOP TO BOTTOM



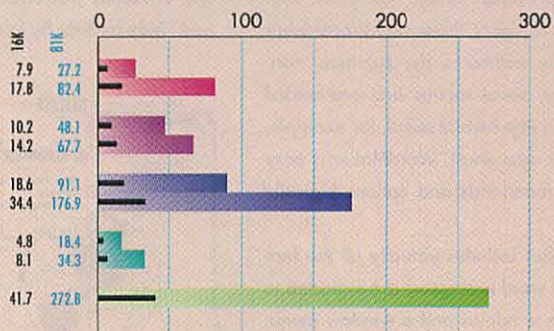
This graph indicates the length of time it took to scroll from the beginning of each test document to the end by pointing to the scroll bar's down arrow and pressing the mouse button.

CHANGE FONT



This graph shows how long it took to change all the text (which was selected before initiating the test) from Palatino to Avant Garde. For both fonts, the size used (12 points) was an installed size. Although the screen text in WriteNow changed immediately, figures in the table reflect the length of time required to regain control of the cursor.

GLOBAL SEARCH AND REPLACE



This graph shows how long it took to replace all occurrences of *the* with *two* (whole words only). In the long document, there were 1016 replacements; in the short document, there were 191. When *the* is replaced by a longer string—more than 30 characters—Microsoft Word still turns in the fastest speed and WriteNow begins to outpace MacWrite II.

sporting a relatively minor upgrade. And Microsoft Write 1.0 is a stripped-down version of its august older cousin, Microsoft Word. I lived with each one of these programs for extended periods to find out which was best.

NEW AND IMPROVED—MACWRITE II

If you think MacWrite II is nothing more than a glossy facade for the original MacWrite, think again. The simple and intuitive (some say simple-minded) original has been replaced by a versatile and relatively powerful program that loses little of MacWrite's legendary ease-of-use and full WYSIWYG point of view. MacWrite II corrects all of MacWrite's serious flaws: you can now open up to seven windows simultaneously (and select an

open window from the View menu); scroll horizontally for easy navigation in extra-wide documents; set the left margin to any width; create footnotes or endnotes (numbered either automatically or manually); and open or save files in Text Only, original MacWrite, WriteNow, Write, Word 3.0, and Microsoft Works formats.

And that's not all. MacWrite II does much more than plug up MacWrite's more serious holes. A new mail merge function, for instance, allows you to insert fields and IF-THEN-ELSE conditions into form letters with a few clicks of the mouse. In addition to the spelling checker, which can check either as you type or after you're finished typing, the WordFinder thesaurus desk accessory and built-in hyphenation are also included (see "Checking Spelling from the Keyboard"). On a slightly more

frivolous note, the Font menu displays each font name in its own font. And MacWrite II's new HyperCard-based online help system is a model of its kind (the size of the Help file—386K—could pose a problem, however, if you don't have a hard disk).

Just as in most word processors, MacPaint and PICT graphics can be imported via the Clipboard, but in MacWrite II, the Insert File command can be used to import graphics directly without opening the graphics program. Once placed in the document, a graphic can be cropped and scaled using graphics tools or by typing in exact coordinates. As with WriteNow, you can hide graphics while working to speed up scrolling.

But it's in the realm of layout that MacWrite II takes a quantum leap. Although all the pages in a document will have the same number of columns (except for the optional title page, which always has a single column), you can define up to ten columns per page. You can define font size and fixed spacing between lines (in points, inches, or metric units) from a dialog box, or you can alter them in 1-point increments by clicking on the ruler. Indents and tabs can also be set from either the ruler or, for greater accuracy, from a dialog box. Font sizes range from 2 to 500 points in 1/4-point increments. For previewing your work, a Reduced Size command displays a single page or pair of pages in miniature. Although usually too small to read, the text on these pages is fully editable.

A few minor complaints about MacWrite II include the fact that although you can define facing pages that have different headers and footers on right- and left-hand sides, these elements will appear throughout the entire document; you cannot insert a new set in the middle of a document. Also, there are no "keep together" commands; manual page and column breaks can be used to avoid widows and orphans, however. The first shipping copies of MacWrite II were somewhat bug-ridden, but the current version, MacWrite II 1.0.2, appears to have solved the earlier problems.

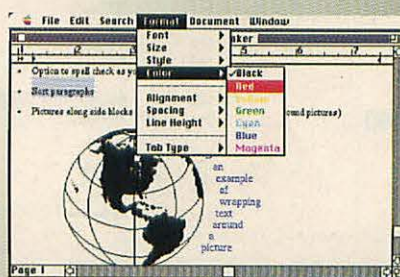
Despite its many improvements and additions, MacWrite II 1.0.2 is just about as

ENTER WORDMAKER

You may wonder, and legitimately so, if the world needs yet another low-end word processor. Well, a program like WordMaker may not reverse global warming, but it could give MacWrite II and WriteNow 2.0 a run for their money. WordMaker is a soon-to-be released word processor built on the same less-is-more principle. Unlike the other programs in this category, however, WordMaker enthusiastically embraces the submenu concept. Although some menus are overloaded with submenus (the Format menu, for example, contains eight submenus), WordMaker is easy to use, with commands and options logically organized.

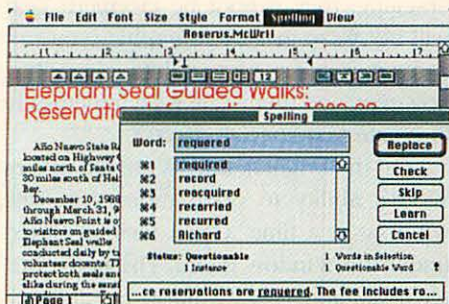
WordMaker includes virtually all the features low-end word processors are expected to have: multiple windows and a window menu; stationery files for storing commonly used formats; mail merge; a spelling checker (which runs either in batch mode or as you type); headers and footers; page number, date, and time stamps; fixed and automatic line spacing; character, word, and paragraph counts; and the ability to copy and paste formats as well as text.

At the time this was written, WordMaker lacked two fundamental features, footnotes and a mechanism for producing right and left pages. On the other hand, WordMaker is capable of color text and graphics, alphanumeric sorting, a variety of different page-numbering styles (Arabic numerals, Roman numerals, letters), and unusually powerful graphics capabilities (see "Side by Side by WordMaker").



Side by Side by WordMaker

Color text and flexible graphics positioning are two hallmarks of WordMaker. Graphics can be positioned anywhere on the page, even directly on top of text. Side-by-side graphics and wrap-around text aren't automatic but can be created relatively easily by resetting text margins.



Checking Spelling from the Keyboard
Because replacement suggestions and action buttons in the Spelling dialog box are all assigned keyboard shortcuts, checking spelling can be accomplished entirely from the keyboard in MacWrite II. On a small screen, you can click on the flag lever to enlarge the dialog box, which displays misspelled words in context. The Spelling Checker can also be used to count the number of words in a document or in a section of selected text.

easy and obvious as its predecessor. Nearly all commonly used commands and options are immediately available on a menu or on the ruler. Only specialized options (such as Space Before, and Space After Paragraphs) appear solely in dialog boxes. If you're tired of menus, most commonly used commands as well as ruler settings, editing and formatting commands, and document navigation movements now have keyboard shortcuts. You can also create up to 30 custom combinations of font, size, and style; these custom styles are automatically added to the Style menu for easy access. In addition, you can now create stationery files to safely store frequently used document layouts and text.

All in all, MacWrite II is an excellent indicator of how far word processing has come on the Macintosh.

MICROSOFT WRITE—A SECOND COUSIN

Unfortunately, Microsoft Write is little more than a pale shadow of Microsoft Word. Even worse, Write is based on Word's often-criticized version 3.0. While many of Word 3.0's more arcane features, such as side-by-side paragraphs, have been stripped away (thank goodness), a number of Word's less user-friendly features still remain. To see what your page will look like when you print it, for instance, you must use the uneditable Page Preview mode, since headers, footers, and mul-

WORD TRIO COMPARED

	MacWrite II 1.0.2	Microsoft Write 1.0	WriteNow 2.0
	Clarisc Corporation	Microsoft Corporation	T/Maker Company
SPECS			
Price	\$249	\$125	\$195
Minimum required RAM	1MB	512K	128K
Program size	577K	287K	102K
Total on-disk size, incl. dictionary & help	1139K	516K	324K (large dictionary), 210K (small dictionary)
WINDOWS			
Editable, full-size WYSIWYG view	•		•
Automatic repagination	•		•
Reduced view	• (editable)	• (not editable)	
Split screen		•	
Window menu	•	•	•
Horizontal scrolling	•	•	•
KEYBOARD			
Smart quotes	•		•
Advanced keyboard navigation	•	•	•
Extended keyboard support	named keys only	named keys only	named keys only
Keypad cursor controls		•	
FORMATS			
Size range (points)	2–500	7–72	4–127
Size increments	1/4 point	standard sizes only	1 point
TEXT STYLES AND FORMATTING			
Condensed and expanded			•
Subscript and superscript	•	•	•
Uppercase, lowercase, initial caps			•
Strikethrough and multiple underline	•		
Color text	•		
Copy and paste formats	ruler settings only	any formatting	ruler settings only
Custom styles	•		
EDITING			
Check spelling in batch	•	•	•
Check spelling while typing	•		
Thesaurus	with Word Finder		
Hyphenation	•		
FIND/CHANGE			
Wild card characters	•	•	•
Invisible characters	extensive	extensive	limited
One-step find and change for formats	•	find only	
DOCUMENT LAYOUT			
Maximum number of columns	10	4	4
Precise (fixed) line spacing	•		•

WORD TRIO COMPARED (continued)

	MacWrite II 1.0.2	Microsoft Write 1.0	WriteNow 2.0
DOCUMENT LAYOUT			
Footnotes	•	•	•
Endnotes	•	•	
Multiple headers and footers			•
Facing pages	•		•
GRAPHICS			
Formats supported	MacPaint, PICT	MacPaint, PICT	MacPaint, PICT
Import directly	•		
Crop and scale	•	limited cropping	scale only
Hide to speed scrolling	•		•
SPECIAL FEATURES			
Mail merge	•		•
Stationery files	•		•
Online help	•	•	
Time, date, page number stamps	•	header/footer only	•
Character/word/paragraph count	word count in spelling checker only	character count only	•
IMPORT/EXPORT			
Open files in these formats*	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 7, 8	1, 2, 3, 8
Save files in these formats*	1, 3, 4, 5, 6, 7	1, 2, 3, 7, 8	1, 2, 3, 8
File format read by DTP programs	†	†	•

*1 = text; 2 = text with line breaks; 3 = MacWrite 5.0; 4 = WriteNow; 5 = Write; 6 = Word 3.0; 7 = Microsoft Works; 8 = RTF (Microsoft Interchange).

† Must save in text-only, Word 1.0, or MacWrite 4.0 format.

multiple columns are not displayed in the active window (see "Previewing Pages in Microsoft Write"). And you must select the Pagination command in order to see the current page breaks.

In a major concession to ease-of-use, Write puts commands in menus rather than in dialog boxes. And for those who prefer to keep their hands on the keyboard, key commands abound. Many keyboard equivalents are inconveniently listed in the manual, however, and not displayed on the menus themselves. Even worse, Write continues an unpopular Word tradition of having many commands (such as Manual Page Break and Find Format) available only from the keyboard.

Write falls particularly short when it comes to long documents and complex layouts. In a fit of oversimplification, Microsoft stripped out a number of important Word layout options and commands while inexplicably leaving in such esoter-

ica as a code-based system for constructing mathematical formulas. The maximum number of columns is four, for example, and the number of columns cannot vary within a document. Only a handful of font sizes are available; line spacing is limited to single, double, and space-and-a-half; and paragraph spacing is either closed (no extra space between paragraphs) or open (12 points of space). Because both paragraph and first-line indents can only be set by dragging markers on the ruler, there is no way to set paragraph and first-line indents by a precise amount.

In Write, a document can have only one header and one footer, and there is no provision for right- and left-side pages. Because footnote and endnote numbering is completely automatic, there is no way to use symbols as reference marks. While MacPaint and PICT graphics imported via the Clipboard can be scaled by

dragging, they cannot be cropped. Text will not wrap around a graphic (you can convert a piece of text into a graphic, however, and then scale it asymmetrically to create text special effects).

On the brighter side, Write did inherit Word's ability to open more than one window at a time. Open files are listed under the Window menu. The horizontal scroll bar and a split window bar are both handy tools for viewing documents. Commands such as Keep With Next Paragraph and Keep Lines Together help prevent bad breaks; Write also has manual page break and column break options. Finally, Write incorporates Word's excellent spelling checker.

WRITE NOW—AN EARLY RIVAL

According to its many loyal fans, the first version of WriteNow was the word processor the original MacWrite should have been. For years, while MacWrite owners were making do, WriteNow users gloated over their multiple windows, horizontal scroll bars, spelling checker, multiple columns, stationery files, and automatic footnotes—all set within a framework at least as intuitive as MacWrite's (see "Multiple Columns in WriteNow"). WriteNow fans also boasted about the program's speed and compact size.

WriteNow 2.0, which really should have been called WriteNow 1.5, fixes the original version's most obvious flaws: it adds fixed line spacing, supports the arrow keys, and eliminates the need for a separate program to convert files to and from WriteNow format. The second version also adds a few new features: most notably a Window menu, smart quotes (right and left quotation marks appear automatically), and a Word-like mail merge function with IF-THEN-ELSE conditional statements. And all without affecting the program's small space requirements (it still runs on a 128K Mac) or its ease-of-use.

Of the three programs reviewed here, WriteNow has the easiest-to-locate commands and options; they all appear on menus or the ruler. Keyboard commands are in short supply, however, because WriteNow supports only two-key short-

cuts. Instead of using ⌘-Shift-letter-key triplets to expand the number of key commands, WriteNow uses number keys in some of its ⌘-key pairs, which is anything but mnemonic. On the other hand, several keyboard shortcuts involving arrow keys provide efficient document navigation. And the named keys on the extended keyboard (cut, paste, page up, and page down, for instance) are supported as well.

WriteNow rivals MacWrite II in overall intuitiveness and surpasses it in compactness, but when it comes to laying out complex documents, WriteNow 2.0 is, by and large, a disappointment. It's true that you can have as many headers and footers as you like (no more than one per page, of course); a very useful Change Case command lets you change text case; and the Keep on Same Page command can help prevent bad paragraph breaks. In most other ways, however, MacWrite II's layout abilities are superior to those in WriteNow 2.0.

The number of columns in WriteNow 2.0 is limited to four. Specifying page margins, intercolumn spacing in multicolumn documents, and gutters in double-sided documents is awkward at best, and difficult most of the time. You must select nonstandard font sizes and all line spacing from the ruler by laboriously increasing or decreasing the current size one point at a time with mouse clicks. You can set paragraph and first-line indents only with

the ruler so there is no way to enter a precise amount of space. Formatting unevenly spaced subheads is far more difficult than it is in MacWrite II (you add blank lines and adjust their spacing).

WriteNow 2.0 falls short in other ways as well. It is the only program of the three that doesn't have online help. There is no reduced view, and although WriteNow displays each page as it will look when printed, you need a full-page or two-page display to see your pages all at once. The mail merge feature, while powerful, is not nearly as easy to use as MacWrite II's. WriteNow's answer to custom styles and style sheets can hardly be described as automatic. Footnotes that are referenced by symbols, rather than automatically numbered, are difficult to create. And objective speed tests indicate that WriteNow's speed advantage has largely evaporated (see "Speed Tests").

AND THE VERDICT IS...

I found Write, WriteNow, and MacWrite II all comfortably quick and responsive during text entry. They are equally effective for creating simple documents like one- or two-page letters, memos, and the like. Therefore, if you have elementary word processing requirements, the choice comes down to price, disk space limitations, minimum RAM requirements, and personal predisposition (see "Word Trio Compared").

Once documents become the least bit sophisticated, however, significant differences between the programs quickly become apparent. Microsoft Write is the least intuitive and most difficult to use, with many commands available only from the keyboard and no editable, full-size WYSIWYG view. Write is too much like the Word 3.0 that writers love to hate. It is, however, the cheapest of the three, so if it's a bargain you're after, then Write may be an appropriate choice. Microsoft's generous policy on upgrades to Word 4.0 (\$220) means that you have a convenient escape hatch should you subsequently decide that, bargain or not, Write just isn't for you.

If memory constraints are your primary concern, then WriteNow 2.0 is proba-



Multiple Columns in WriteNow

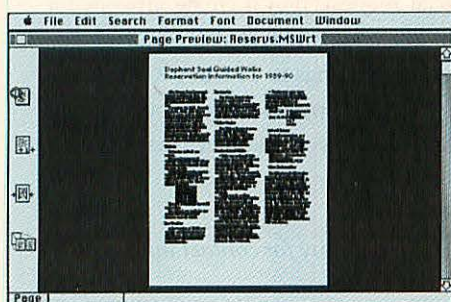
In multicolumn documents, the tops of the columns in WriteNow often do not align properly on the screen, although they do print correctly. Fortunately, the ruler conveniently changes into a series of rulers (one for each column) when there are multiple columns, making it easy to set paragraph and first-line indents anywhere in the document.

bly your best choice. It can run on a 128K Mac and, with the smaller of its two dictionaries, it requires only 210K to run. However, while WriteNow clearly had an edge over the original MacWrite in terms of power and ease-of-use, with few exceptions WriteNow 2.0 has been outdone by MacWrite II.

All things considered, MacWrite II succeeds where Write and WriteNow fail: its power and versatility are balanced by its speed and ease-of-use. Undeniably, MacWrite II is more expensive than the other two programs, and it requires more disk space and more RAM than either Write or WriteNow. But MacWrite II handles simple notes and long, complex documents with equal grace, and it manages to incorporate a wide variety of useful features without losing the intuitive feel of its venerable predecessor. If I were packing my bags for a desert isle, in addition to those compact disks I've been carefully hoarding, I'd unhesitatingly pick MacWrite II over Write or WriteNow as my word processor. **M**

See *Where to Buy* for contact information.

.....
Robert C. Eckhardt spends the better part of every day writing on a Macintosh. He is a Macworld contributing editor and author of *The Fully Powered Mac* (1988) and *The FullWrite Professional Handbook* (1989), both published by Brady Books.



Previewing Pages in Microsoft Write

To see headers, footers, footnotes, and multiple columns as they will print on the page, you must open Write's Page Preview window. You can add page numbers, insert manual page breaks, adjust margins and header and footer positions, view two pages side-by-side, and zoom in on specific areas with a magnifying glass tool, but you cannot edit text in this view.

The CLIP ART

Buyer's Guide

What do teddy bears, samurai warriors, human skeletons, and military aircraft have in common? Not much, really. Except that they can all be found in several Macintosh clip art collections. If you're in the market for prefab art, you now have hundreds of disks and thousands of images to choose from—Mac art is being generated at a rapid clip by more than 50 companies. In addition to floppy disks, several companies now offer compact disks packed with images in almost every subject area imaginable.

Mac clip art falls into four basic species: bitmapped (Paint), Draw (PICT), scanned images (TIFF), and—in ever-increasing amounts—PostScript. Each format has its advantages and its drawbacks. Bitmapped and TIFF images capture fine-grained, dot-by-dot detail, but can take up a lot of disk space, are difficult to modify, and may lose clarity when scaled. PICT images can be easily scaled or modified with a drawing program, but are losing ground to the elegant flourishes of PostScript's bezier curves. Many clip art developers are turning to FreeHand and Illustrator 88 to create crisp, clean—and editable—artwork. These images are often available in the parent application's format or saved as encapsulated PostScript (EPS). If you have Illustrator 88 or FreeHand, you can edit EPS images, adding or changing colors, scaling images, modifying paths, or even separating images into their component parts and combining them with parts of other images. FreeHand owners can open art created with Illustrator 88 if it's saved in EPS or Illustrator 1.1 format, but colors may be altered in the translation.

With all these companies and all these formats, what's a clip art shopper to do? For starters, you can examine "Clip Art Collections" to find which companies supply images in the subject areas you want (to be included in any category in the table, a

Macworld's third buyer's guide shows that Mac clip art collections offer something for everyone

collection had to have at least four images in that category). The table will help you narrow your search, but how do you know if a given company's artwork meets your standards? Look at the figure "Eight Abes," for example, and note the vast differences in how the same subject is rendered by different companies. I've marked companies whose artwork I recommend in the table with a star, and provided samples of quality artwork in "Clip Art Gallery." Your best bet is to contact likely manufacturers for information; many will send you promotional material with sample drawings. For a comprehensive visual overview, you can purchase *The Electronic Clip Art Digest* (\$135.95 including shipping) from The Electronic Clip Art Company. This handy catalog includes more than 15,000 images from 30 companies, as well as a detailed subject index and a clip art sampler disk.

If traditional clip art formats don't meet your needs, perhaps 3-D clip art will. Enabling Technologies' (800/544-0629, 312/427-0408 in Illinois) Clip3D includes software that lets you tilt, rotate, and add perspective and lighting to color images, which can then be saved in MacPaint, TIFF, or EPS format and transferred to other programs. The \$99 volumes encompass the following categories: Geography, Fonts, Accents, Business, Lifestyle, Messages, People, and Recreation.

Comstock (212/353-8600) offers five volumes of stock photographs stored as TIFF files on CD ROM. The images, which are licensed for in-house, noncommercial use, fall into the following categories: Business, Health and Fitness, Travel and Vacations, People, and Miscellaneous.

Or, if you have an image you want to convert to a Mac graphics format, several companies will oblige. Wordscapes (415/968-8737) will convert a logo, technical drawing, or just about any other type of graphic into EPS format. The Sorcerer's Apprentice (513/221-0748) will magically transform photos or video frames in VHS, Betamax, or 8mm format into Mac artwork.

Finally, some clip art companies take requests. For example, Showker Graphic Arts & Design (703/433-1527) offers a service called Clip Art to Go. If you have a special request, they'll create artwork for you. The company will also convert logos or other drawings to EPS or PICT format.

With a little perseverance, you're bound to find the subjects and styles that suit your publications.

See Where to Buy for contact information.

.....
Erfert Fenton is a Macworld contributing editor and the author of *The Macintosh Font Book* (Peachpit Press).

b y E r f e r t F e n t o n



CLIP ART COLLECTIONS

Company/Collections

Format

No. of disks, size

Price

Animals

Borders

Computers

Decorative Elements

Dinosaurs

Education

Entertainment/Travel

Flags

Food/Drink

Hands

Holidays

Maps

Military

Money

Motifs

Music

Office

People

Plants/Flowers

Presidents, U.S.

Professions

Religion

Seasons

Sports

Transportation

Eight Abes

As you can see, drawing style and quality varies from one clip art vendor to another. Call or write the manufacturers listed in "Clip Art Collections" for sample drawings, or check The Electronic Clip Art Digest.



T/Maker Company



Multi-Ad Services



Casady & Greene

★ Adobe Systems

Adobe Collector's Edition:

Symbols, Borders & Letterforms

I

2/800K

\$125

•

•

•

Patterns & Textures

I

9/800K

\$225

•

•

•

•

AD-Techs

PICTures, Volume 1

PICT

1/400K

\$34.95

•

•

•

•

•

•

•

Bede Tech

Coloring Book Art

P

4/400K

\$12.95/disk

•

•

•

•

•

Bitmap

Electronic Wood Cuts

P

1/400K

\$39.95

•

•

•

•

•

•

•

Holiday Clip Art

P

1/400K

\$39.95

•

•

•

•

Brainstorm Design

Real Art: Children

EPS

4/800K

\$149.95

•

Real Art: Just Hands

EPS

4/800K

\$149.95

•

Real Art: Portraiture of Men

EPS

4/800K

\$149.95

•

Real Art: Portraiture of Women

EPS

4/800K

\$149.95

•

★ Casady & Greene

Vivid Impressions: Special Events

EPS

7/800K

\$130

•

•

•

•

•

•

Cathay Europa Trading Company

GlobalArt Oriental Images:

Decorative Accents

P

2/400K

\$79

•

•

•

Embellishments

P

2/400K

\$79

•

•

Collector Software

Bearware series

P

9/400K

\$12/each;
\$99 for 9

•

•

•

CompuCraft

Mac-Art Library

P

12/400K

\$250

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

(\$275

PictureBase)

Davka Corporation

Davka Graphics I

P

1/400K

\$34.95

•

•

•

•

Davka Graphics II

P

1/400K

\$34.95

•

•

•

•

•

•

Davka Graphics III

P

1/400K

\$34.95

•

•

•

•

Davka Graphics EPS: Jewish Holidays

EPS

1/800K

\$79.95

•

•



Springboard Software



Miles Computing



GoldMind Publishing



Visatex Corporation



Dynamic Graphics

Devonian International
Software Company

Artogenix: Planes of Fame P 1/800K \$39.50

DiskArt

Creative Seasonal EPS 4/800K \$125
Creative Theme Art I EPS 5/800K \$125
Flags of the USA EPS 5/800K \$125
Flags of the World EPS 5/800K \$125
International Symbols EPS 5/800K \$125
Military Art EPS 9/800K \$350

Dream Maker Software

Cliptures, Vol. 1: Business Images EPS 4/800K \$129.95
Cliptures, Vol. 2: Business Images 2 EPS 5/800K \$129.95
MacGallery P, HC 3/400K (P) or 2/800K (HC) \$49.95

★ Dubl-Click Software

WetPaint: All the People P 3/800K \$79.95
WetPaint: Animal Kingdom P 3/800K \$79.95
WetPaint: Classic Clip Art P 3/800K \$79.95
WetPaint: For Publishing P 3/800K \$79.95
WetPaint: Industrial Revolution P 3/800K \$79.95
WetPaint: Old Earth Almanac P 3/800K \$79.95
WetPaint: Printer's Helper P 3/800K \$79.95
WetPaint: Special Occasions P 3/800K \$79.95

D.V. Franks

ArtDisk 1: Buildings, Landscapes & Decor P 1/400K \$39.95
ArtDisk 2: People, Animals & Birds P 1/400K \$39.95
ArtDisk 3: Humor & Wit P 1/400K \$39.95
ArtDisk 4: Aquatic Life P 1/800K \$39.95
ArtDisk 5: Works of Art PICT 10/800K \$129
ArtDisk 7: Christian Images EPS 2/800K \$79.95

★ Dynamic Graphics

DeskTop Art: Artfolio 1 P, PICT 2/800K \$74.95
DeskTop Art: Borders & Mortices 1 P, PICT 2/800K \$74.95
DeskTop Art: Business 1 P, PICT 2/800K \$74.95
DeskTop Art: Education 1 P, PICT 2/800K \$74.95
DeskTop Art: EPS Athletics 1 EPS 3/800K \$74.95⁴
DeskTop Art: EPS Commerce 1 EPS 3/800K \$74.95⁴
DeskTop Art: EPS Design Elements 1 EPS 2/800K \$74.95⁴
DeskTop Art: EPS People 1 EPS 3/800K \$74.95⁴
DeskTop Art: EPS Potpourri 1 EPS 3/800K \$74.95⁴
DeskTop Art: EPS Sales & Promotions 1 EPS 3/800K \$74.95⁴
DeskTop Art: EPS Seasonal 1 EPS 3/800K \$74.95⁴
DeskTop Art: Four Seasons 1 P, PICT 2/800K \$74.95
DeskTop Art: Graphics & Symbols 1 P, PICT 2/800K \$74.95
DeskTop Art: Health Care 1 P, PICT 2/800K \$74.95
DeskTop Art: Sports 1 P, PICT 2/800K \$74.95

CLIP ART COLLECTIONS

(continued)

Company/Collections	Format ¹	No. of disks, size	Price ²	Animals	Borders	Computers	Decorative Elements	Dinosaurs	Education	Entertainment/Travel	Flags	Food/Drink	Hands	Holidays	Maps	Military	Money	Motives	Music	Office	People	Plants/Flowers	Presidents, U.S.	Professions	Religion	Seasons	Sports	Transportation
---------------------	---------------------	--------------------	--------------------	---------	---------	-----------	---------------------	-----------	-----------	----------------------	-------	------------	-------	----------	------	----------	-------	---------	-------	--------	--------	----------------	------------------	-------------	----------	---------	--------	----------------

★ Electronic Pen

Publishers Resource	EPS	12/800K	\$250	•	•	•	•				•			•			•		•	•	•	•					•	•
Electronic Publisher																												
MacMatbook, Volumes 1-3	P (PB) ³	3/400K	\$99.95	•							•	•		•					•		•						•	•
MacMatbook, Volumes 4-6	P (PB)	3/400K	\$99.95	•										•							•				•	•	•	•
			(vol. 1-6 \$179.95)																									

★ GoldMind Publishing

MacGraphics, Vol. 1: Transportation	P	1/800K	\$39.95																									•
MacGraphics, Vol. 2: Birds & Animals	P	1/800K	\$39.95	•																								
MacGraphics, Vol. 3: Trees & Plants	P	1/800K	\$39.95																			•						
MacGraphics, Vol. 4: Business Graphics	P	1/800K	\$39.95			•							•				•			•								
MacGraphics, Vol. 5: Food & Beverages	P	1/800K	\$39.95									•																
MacGraphics, Vol. 6: People	P	1/800K	\$39.95																		•							
MacGraphics, Vol. 7: Occupations	P	1/800K	\$39.95																	•	•			•				
MacGraphics, Vol. 8: Caricatures	P	1/800K	\$39.95	•																	•			•				
MacGraphics, Vol. 9: Special Occasions	P	1/800K	\$39.95											•							•							
MacGraphics, Vol. 10: Signs & Symbols	P	1/800K	\$39.95																					•				
MacGraphics, Vol. 11: Sports & Recreation	P	1/800K	\$39.95							•											•					•		
MacGraphics, Vol. 12: Education	P	1/800K	\$39.95						•										•				•					
MacGraphics, Vol. 13: Frames & Borders	P	1/800K	\$39.95		•		•										•					•						
			(vol. 1-13 \$245)																									

Hired Hand Design

Moonlight Artworks	EPS	6/800K	\$125	•	•	•	•	•		•	•		•	•							•				•			•
--------------------	-----	--------	-------	---	---	---	---	---	--	---	---	--	---	---	--	--	--	--	--	--	---	--	--	--	---	--	--	---

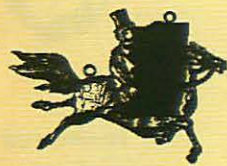
★ Image Club Graphics⁴

Digit-Art, Vol. 1	EPS, PICT	3/800K	\$99		•	•	•		•								•	•		•							•
Digit-Art, Vol. 2	EPS, PICT	4/800K	\$99		•	•	•			•							•	•		•	•						
Digit-Art, Vol. 3	EPS	5/800K	\$149	•	•		•			•	•	•								•	•		•			•	•
Digit-Art, Vol. 4	EPS	3/800K	\$99	•		•	•			•										•	•			•		•	
Digit-Art, Vol. 5	EPS	3/800K	\$99	•						•	•									•	•			•		•	•
Digit-Art, Vol. 6	EPS	3/800K	\$99	•						•										•	•			•		•	•
Digit-Art, Vol. 7	EPS	5/800K	\$99										•														
Digit-Art, Vol. 8	EPS, PICT	3/800K	\$99		•	•	•										•	•									•
Digit-Art, Vol. 9	EPS	5/800K	\$149		•		•	•		•							•	•									
Digit-Art, Vol. 10	EPS	1/800K	\$99																								
Digit-Art, Vol. 13	EPS	5/800K	\$99		•					•		•					•	•			•						
Digit-Art, Vol. 14	EPS	5/800K	\$99	•	•					•				•			•							•	•		
Digit-Art, Vol. 15	EPS	5/800K	\$99							•											•						

MacPDS

Medical Application Clip Art, Vol. 1	P	2/800K	\$89.95						•															•				
--------------------------------------	---	--------	---------	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	--	--	--	--

Clip Art Gallery
If I were stranded on a desert island and could bring only several clip art collections to illustrate the messages I was stuffing in bottles, I'd choose collections from the companies shown here. Other companies offer good collections; unfortunately, we don't have space to show samples from each.



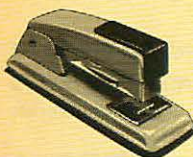
Qualitas Trading Company
Japanese Clip Art:
Borders



Totem Graphics
Insects Vol. 4



Miles Computing
Mac the Knife, Vol. 5:
People, Places & Things



T/Maker Company
EPS Business Art



3G Graphics

*Images with Impact:
Business 1*



**Metro ImageBase
Newsletter Maker**

Magnum Software Corporation

[illegible]

Marketing Graphics

PicturePak:

[illegible]

Medina Software

[illegible]

★ **Metro ImageBase**

Art Deco	TIFF	6/800K	\$145				.	.	.					.			.	.	.
Bardors & Boxes	TIFF	4/800K	\$145		.	.		.	.	.			.	.			.	.	.
Business Graphics	TIFF	6/800K	\$145		.				.			.	.	.	.			.	.
Computers & Technology	TIFF	5/800K	\$145		.		.						.	.		.		.	.
Exercise & Fitness	TIFF	4/800K	\$145				.	.						.	.		.	.	.
Food	TIFF	6/800K	\$145				.	.			.		.	.				.	.
The Four Seasons	TIFF	5/800K	\$145	.		.		.	.	.				.	.		.	.	.
Newsletter Maker	TIFF	4/800K	\$145		.		.	.	.	.		.		.	.		.	.	.
Nine to Five	TIFF	5/800K	\$145				.	.					.	.				.	.
People	TIFF	6/800K	\$145				.							.	.			.	.
Report Maker	TIFF	6/800K	\$145							.			.	.	.		.	.	.
Team Sports	TIFF	4/800K	\$145										.	.			.	.	.
Travel	TIFF	5/800K	\$145			.	.	.		.		.		.	.		.	.	.
Weekend Sports	TIFF	5/800K	\$145	.			.							.	.		.	.	.

★ **MicroMaps Software**

MacAtlas EPSF Version	EPS	4/800K	\$199	•	•
MacAtlas Paint Version 2.0	P	2/400K	\$79	•	•
MacAtlas Presentation Pack	PICT ⁷	2/800K	\$199	•	•
MacAtlas Professional Version	PICT	2/400K	\$199	•	•

★ **Miles Computing**

[illegible]

★ **Multi-Ad Services**

[illegible]

New Edge Technologies

[illegible]

CLIP ART COLLECTIONS

(continued)

Company/Collections	Format ¹	No. of disks, size	Price ²	Animals	Borders	Computers	Decorative Elements	Dinosaurs	Education	Entertainment/Travel	Flags	Food/Drink	Hands	Holidays	Maps	Military	Money	Motivations	Music	Office	People	Plants/Flowers	Presidents, U.S.	Professions	Religion	Seasons	Sports	Transportation
---------------------	---------------------	--------------------	--------------------	---------	---------	-----------	---------------------	-----------	-----------	----------------------	-------	------------	-------	----------	------	----------	-------	-------------	-------	--------	--------	----------------	------------------	-------------	----------	---------	--------	----------------

NovaCube

Military Art	P	4/800K	\$39			•	•				•				•	•											•
	HC		\$49			•	•				•				•	•											•
	PICT		\$79			•	•				•				•	•											•
	EPS		\$129			•	•				•				•	•											•

Olduvai Corporation

ArtClips, Vol. 1: Graphics & Symbols	EPS	4/800K	\$99	•	•		•	•		•		•	•								•	•		•		•	•
ArtClips, Volume 2: Business Images	EPS	4/800K	\$129		•	•	•			•	•		•				•			•						•	•

Pleasant Graphic Ware

Heraldry, Vol. I, II	P	1/400K	\$42.95								•					•											
Heraldry, Vol. III		1/800K	\$82.95								•					•											
SmArt Family/SmArt Foods	P	1/800K	\$82.95	•					•			•		•							•	•				•	
SmArt Mouse	P	1/400K	\$42.95	•										•							•	•				•	•

★ Qualitas Trading Company

Japanese Clip Art: Borders	P	1/800K	\$99.95	•	•		•											•			•	•					
Japanese Clip Art 1: Heaven	P	1/800K	\$79.95	•																	•			•			
Japanese Clip Art 2: Earth	P	1/800K	\$79.95	•																	•	•			•		
Year of the Dragon 88	P	1/800K	\$29.95	•																							

Showker Graphic Arts & Design

Graphic Warehouse	P, PICT, EPS I, Canvas	30/800K	\$19/4-disk set	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•
-------------------	---------------------------	---------	-----------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	---	---	---	---	---	---	---	---

★ Silicon Designs

Art Nouveau Images, Vol. 1	EPS	2/800K	\$79.95	•														•			•	•				
----------------------------	-----	--------	---------	---	--	--	--	--	--	--	--	--	--	--	--	--	--	---	--	--	---	---	--	--	--	--

Springboard Software

Works of Art:

Assortment Series Sampler	P, HC	2/400K	\$49.95	•					•	•		•		•	•			•	•	•	•	•		•		•	•
Education Series Sampler	P, HC	2/400K	\$49.95	•					•						•		•		•		•	•		•			
Holiday Series Sampler	P, HC	2/400K	\$49.50						•	•				•							•		•		•		
Laser Art Business Selection	EPS	4/800K	\$99.95			•		•		•				•						•							•

Storm King Technology

Air Art	P	2/400K	\$89.95													•					•			•			
Army Art	P	4/400K	\$89.95	•												•					•			•			•
Navy Art	P	2/400K	\$89.95													•					•			•			•
Space Art	EPS	5/800K	\$395													•								•			•

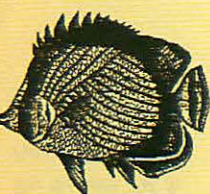
Studio Advertising Art

Click & Clip: Winter 1987	EPS	2/800K	\$39.95				•		•					•			•			•							
Click & Clip: Spring 1988	EPS	2/800K	\$39.95				•					•		•						•						•	
Click & Clip: Summer 1988	EPS	2/800K	\$39.95				•		•			•								•						•	
Click & Clip: Fall 1988	EPS	2/800K	\$39.95									•	•							•						•	

Clip Art Gallery (continued)



SunShine Graphics
SunShine Graphics Library,
Vol. 36: Beautiful Women



GoldMind Publishing
MacGraphics: Vol. 2,
Birds & Animals

THE PREPRESS CONNECTION

Linking Macintosh publishing tools
to the prowess of high-end prepress systems
brings you the best of both worlds . . .

Or does it?

BY STEVE ROTH

There's no denying it. When it comes to producing top-quality, glossy publications with color photographs, Macintosh publishing hits its head on a technological ceiling. For a variety of reasons, desktop technology still can't beat minicomputer-based electronic prepress systems at this type of job.

To begin with, PostScript imagesetters like the Linotronics still can't match the speed and image-handling abilities of high-end film recorders. Even in film for simple colored boxes and type, moiré patterns often rear their ugly, plaid heads. Moirés are even more common in scanned photographs. Mac page-makeup programs don't have the tools to easily trap page elements, a necessary precaution against registration variance on press. Desktop scanners and scanner software are hard-pressed to capture high-quality, separation-ready scans. And the files required for such scans would be too big to manage on most Mac systems anyway, not to mention the time such huge files would take to print.

Even assuming these and other technical prob-

lems are solved in the near future, questions of inclination and expertise would keep many publishers from cancelling their prepress contracts in favor of in-house Macintosh production. Few designers want to concern themselves with nitty-gritty production details like setting frequencies or building traps. And it's hard to find a PostScript imagesetting service with the skill and will to achieve the strict tolerances that color separation requires.

Such considerations, however, no longer need keep Macintoshes out of high-powered publications. Hybrid systems are now emerging that promise to combine the flexibility, control, and economy of desktop publishing tools with the prowess and quality of high-end prepress systems, in the process keeping the onus of color production from the shoulders of Mac designers.

With these desktop/prepress combos, a designer builds pages on the Mac, specifying colors for page elements and placing low-resolution scanned images, and prints the pages on a color printer for approval. Instead of using the page files to produce



Time Inc.'s Dennis Chesnel (left) and Jeff Seibert demonstrate the link between a Crosfield image-editing station and a Mac running ReadySetGo.

JONATHAN LEVINE

final output, the designer saves a file that specifies the positions, sizes, colors, and contents of all the page elements (the *page geometry*) and passes it on to the prepress house. Using this page geometry, the prepress operator can quickly assemble pages on a prepress page-assembly console, scanning color photographs and merging them into the pages, trapping page elements, correcting colors, and producing color-separated film along with color proofs.

While this scenario sounds ideal, how well the hybrids will really work and whether they will save time or money remain largely matters of speculation at this writing. Some significant kinks need to be worked out before these systems can offer obvious efficiencies to a wide variety of users. The problem of how to handle the scanning and separation of photographs is a case in point.

SCANNING SCHEMES

The simplistic scanning scenario being thrown around in the literature coming from prepress

vendors goes something like this. The prepress service scans images on a drum scanner at high resolution but creates low-resolution versions for use in page layout. The designer places, sizes, and crops the low-resolution images and, if it's desirable, prints comps on a color printer. Once the designs are approved, the designer passes the files to the prepress shop, where high-resolution scans are automatically substituted and separations made. Since the prepress software assembles, sizes, crops, distorts, and rotates the high-resolution scan files automatically, reproducing the operations that were performed on the low-resolution scans, it keeps operator times to a minimum and makes real cost savings possible.

In reality, this high-res/low-res approach works only if you know the image scaling, rotation, and other placement characteristics *in advance* of scanning. Of course, this is self-defeating, since the beauty of these systems is supposed to be that they accommodate the flexible, interactive design process to which desktop publishers are accustomed.

COMPARING COSTS

Given that prepress systems can provide quality that the Mac/PostScript combo can't (not yet, at least), the next question is whether the desktop/prepress links provide any savings over traditional methods. The answer? It depends.

If you're satisfied with the quality you can get from Macintosh/PostScript color separations of object graphics (colored type and page elements), then the systems reviewed here don't have anything to offer you. They will cost more and will increase turnaround time. If you're not satisfied with the level of quality you see, for example, in *Macworld* or if you just don't want to worry about things like trapping and adjusting screen angles, these systems will be worth considering.

If you are in the exclusive group of publications who might need one of these systems, your potential for the greatest savings lie in automating the stripping process and limiting revision cycles—especially late revisions that require restripping. Prepress shops bill for the process of converting, separating, and outputting page files at a much lower rate—about \$200 an hour—than they do for actual color console time. Of course, these savings are possible only if everything really does fall into place without human intervention. If the page has to go to the color page-assembly console for adjustment, the fee is \$400 to \$900 an hour, compared to \$50 an hour for a skilled stripper assembling elements by hand. Computers make for

fast work, but they're probably not ten times as fast as manual methods.

Also, contrary to what you may have heard, you won't find real savings with scanned photographs. The process can't really be automated unless you know the image sizing and rotation in advance (see the discussion under "Scanning Schemes" in the main article), so most image handling is done just the way it has been in the past, and costs are about the same.

Prepress houses are starting to find that desktop links are mainly appropriate when there's a need to modify images on the system anyway—for photographic special effects or color correction, reversing type out of a photo, or dropping a photo into a complex shape. Otherwise, the half hour or so per page that it takes just for conversion and output (at \$200 an hour) eats up savings fast.

Before you study the accompanying cost chart, be warned that there are dozens of variables in figuring the cost of prepress work. Are you a regular customer? How many subheads will you have in a given process color combination? Are the lines around sidebars hairlines or 2-point rules? Do you want traps built? Even within a given prepress shop, there can be two or three methods of pricing jobs, depending on the type of job and type of customer. These numbers are meant only to give a rough comparison.

With all those variables in mind, we've developed three projects and figured approximately

what the production invoice would look like using four different methods.

A. The first method is the traditional one: produce the whole page in black and white with your desktop publishing system, mark it up for color and photo positioning on a tissue overlay, and have the film tints and traditionally separated photos stripped in by the prepress house. It's up to them whether they use the prepress system or hand stripping—whichever is cheapest.

B. The second method uses QuarkXPress, PageMaker with Color Extension, or some other separation-capable program to separate the basic pages—type and graphics. Photos are separated by a separation house and stripped in by hand. (This is the routine we follow at *Macworld*.)

C. The third method also uses QuarkXPress or PageMaker Color Extension with a PostScript imagesetter, but the files move through a CyberChrome shop that handles all the scanning, separations, and output of complete pages to film.

D. The fourth method uses a prepress link like those described in this article. These systems are just developing, and prepress services aren't sure how much it's going to cost, so we provide a range, assuming a half-hour per page for conversion and output at \$200 an hour. The low estimate assumes no operator time for color console work (trapping and image placement); the high estimate assumes half an hour per page at \$600 an hour.

PREPRESS PRICES

		Traditional	Desktop	CyberChrome	Prepress Link
8 1/2-by-11 three-fold flyer	Includes 5 two-color subheads, 2 three-color heads, 2 two-color sidebars, 5 two-color 1-point rules, color page proofs	\$500	\$180	\$180	\$300–\$700
8 1/2-by-11 three-fold flyer	Includes same as above, plus 4 color photos, color page proofs	\$1150	\$830	\$380	\$700–\$1300
24-page annual report (excluding covers)	Includes 48 two-color subheads, 10 three-color heads, 7 two-color pull quotes, 8 two-color sidebars, 96 two-color 1-point rules, 11 color photos, color page proofs	\$7425	\$4425	\$2614	\$4700–\$11,900

There are a number of reasons why high-resolution scans can't be prepared in advance. First, the files are huge, and the prepress service would have to archive them during the days, weeks, or months that the pages were being designed and approved. Second, and more important, unless the prepress operator knows the final screen ruling and has at least a good idea of the scaling, he or she can't know the scanning resolution that will yield the best quality. Processing time is also an issue: it takes a lot of machine time to resize or rotate a 5MB-to-30MB image, more time and trouble than it takes to simply rescan it. So the truth is that images must usually be scanned twice—once for the low-res version and once for the final version.

You could make the low-res scan using a desktop scanner attached to a Mac II, but then the prepress operator would have to manually specify the crop points for the final scan and place the image on the page—probably following a comp that you would provide along with your electronic page files. Prepress operators can do this with a great deal of accuracy, but it takes time, especially if you have a lot of images, and on a prepress system time is money—big money (see "Comparing Costs"). In the end, manual stripping is often cheaper and easier.

POSTSCRIPT'S PART

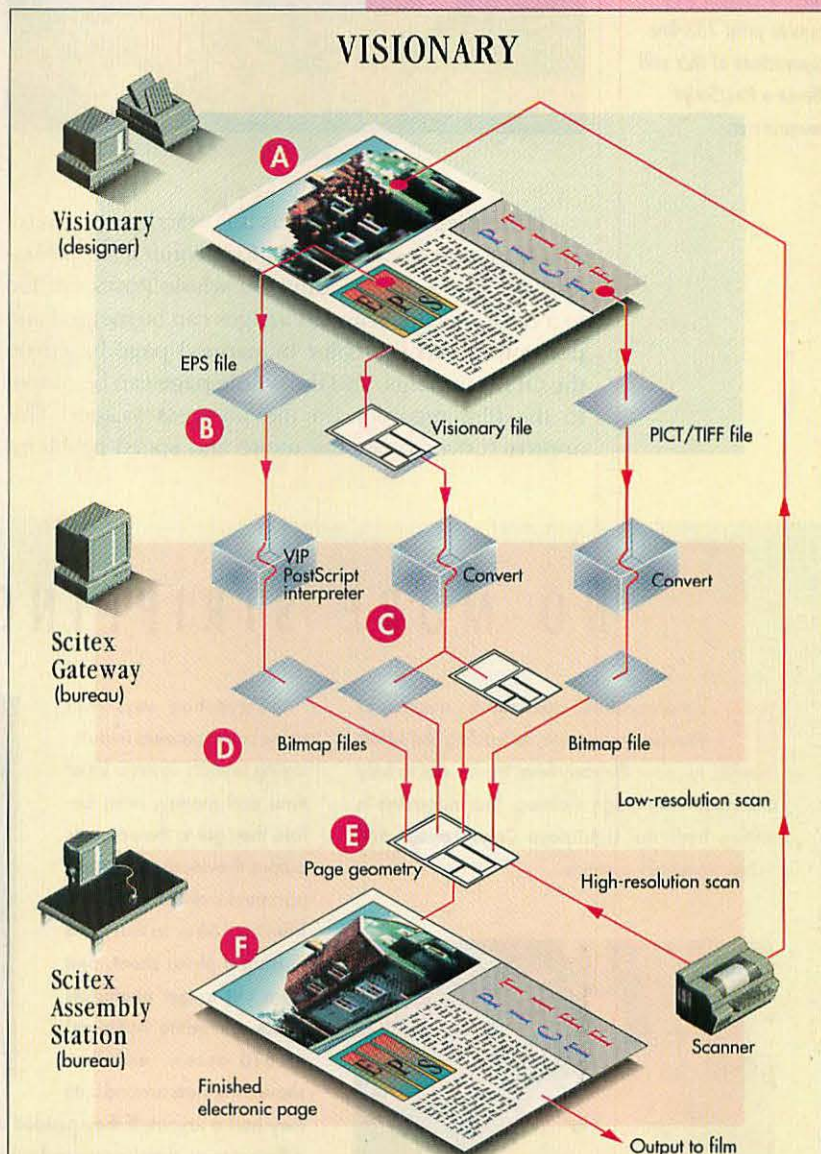
With its central role in desktop publishing, it's only natural that PostScript should have an important part to play in desktop-to-prepress links. As it turns out, PostScript can play many different roles in these systems.

The most far-ranging approach is the Open Prepress Interface (OPI), which Aldus has developed and all the major prepress vendors have at least announced they will support. The idea is that a Mac program puts out PostScript just as it normally would but with embedded comments specifying the position, scaling, distortion, cropping, and rotation of scanned images. According to Aldus, prepress systems that can read OPI PostScript (there are none as of this writing, though Hell's ScriptMaster is close) can work with these files in a number of ways.

One approach is to output the PostScript page to a PostScript imagesetter, meanwhile using the image comment information to scan images and create a second set of film on the prepress system. This second set of film includes all the scan separations, positioned, registered, and masked for manual stripping into the PostScript pages. Under this scheme, the output quality of the nonscanned elements is subject to the limitations of PostScript devices. Manual stripping is partially automated, which may achieve a small sav-

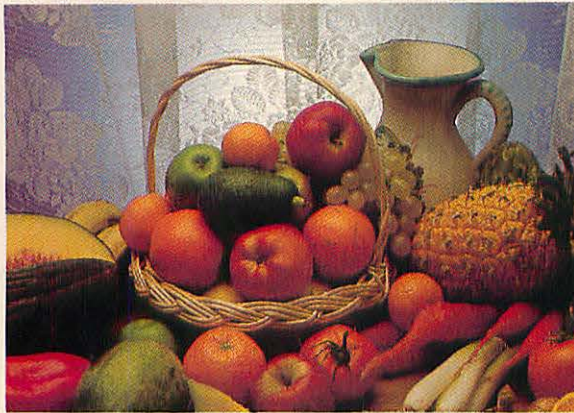
ings, and you may require fewer color proofs, since all the images from a page will be on a single set of film.

Another method is to have the prepress operator use the image-placement comments to merge separated images in PostScript format into the PostScript page file and output the complete page to a PostScript imagesetter.



This diagram shows the Scitex system at its most automatic. It assumes that the designer knows the approximate scaling of photographs previous to scanning. (A) The designer uses Visionary software on a Macintosh to lay out pages, placing low-resolution FPO scans provided by the prepress service. EPS, TIFF, and PICT images may also be used. (B) The designer saves the page in Visionary format and passes this file along with any EPS and TIFF or PICT files to the Gateway station at the prepress house. (C) The Gateway operator converts the files to Scitex format, and (D) passes the resulting bitmaps (including one for text) and page geometry files to a Scitex Response system for assembly. (E) Page geometry information is used to merge the linework bitmaps automatically with high-resolution scans, which replace the FPO versions. (F) A Response operator performs digital retouching and builds any masks or traps required, using information garnered from a digital comments layer; when the page is ready, it is separated and sent to a Scitex film plotter.

Pushing the Limits of Desktop
The PC-based Cyber-Chrome system was used to print 133-line separations of this still life on a PostScript imagesetter.



If the prepress system has a PostScript interpreter as a front end (as with Hell's forthcoming ScriptMaster), the operator can convert a whole PostScript file to a color bitmap. Scanned images can be merged and positioned into the color bitmapped page based on the OPI comments, and the whole page can be output to the film recorder on the prepress system. This approach overcomes the moiré and speed problems

associated with PostScript imagesetters, and allows for trapping on the prepress system, where the operator can make use of automated trapping tools.

In the basic Scitex Visionary and Crosfield Studio-Link systems, PostScript plays no role at all. Page geometry and typesetting information are transferred using proprietary file formats. However, both Crosfield and Scitex plan to offer optional interpreters, the Scriptor/PS interpreter and the Visionary Interpreter for PostScript, which will convert PostScript illustrations to big color bitmaps so that they can be merged with the rest of the page.

SCITEX VISIONARY

The final version of Scitex Visionary wasn't ready when I wrote this, but the system was already in use by several Scitex customers (see "No More Stripping at Playboy"). One of the more expensive and restrictive of the systems in this article, the Scitex hybrid is based on a customized version of QuarkXPress that's hardware-locked to a board in the Mac II (see "Visionary" for an outline of the Scitex scheme).

NO MORE STRIPPING AT PLAYBOY

Eric Shropshire, assistant art director at *Playboy* magazine, is leading the effort to move *Playboy* from traditional to fully electronic color page makeup. The magazine is testing both the Lightspeed Color Layout and Scitex Visionary systems.



Playboy's Eric Shropshire: "The designs are better, because you can try out more options faster."

Shropshire says that using color scanners in dummied layouts saves a lot of time and money, even before they get to the prepress output. Previously, the art department took 30 or 40 shots from the 150 or so that come in from a photo shoot, sent them out to get photostats (black-and-white halftones) at \$10 apiece, and then shoved the stats around until they had a layout. If they needed any photos at different sizes, they had to send out for more stats.

Now they use color scanners to capture the images, and use Visionary or Color Layout System to create the layouts. They can see the color images on screen, size them, wrap type just the way they want it, and print color comps for approval by the powers-that-be. Then they mark up the final comps with their specifications and send them to the printer. *Playboy* is just begin-



Color mock-ups help to limit revisions. The comp of this March '89 cover was designed on the Lightspeed system and printed on a Mitsubishi G650.

ning to test the electronic prepress connection.

Shropshire says that the greatest savings result from the reduced turnaround time and reduced revision cycles. With the prepress link, most of the savings will come in typesetting and stripping.

The Visionary version of XPress includes a number of special features that help color publishers to work with images. The software uses Bitstream typefaces, 38 of which are included in the package. When the Visionary Interpreter for PostScript (VIP) option becomes available (it should be by the time you read this), designers will be able to use PostScript graphics and type, including Adobe typefaces. The initial version of VIP will permit only 256 colors per graphic, which will preclude images that make extensive use of gradients.

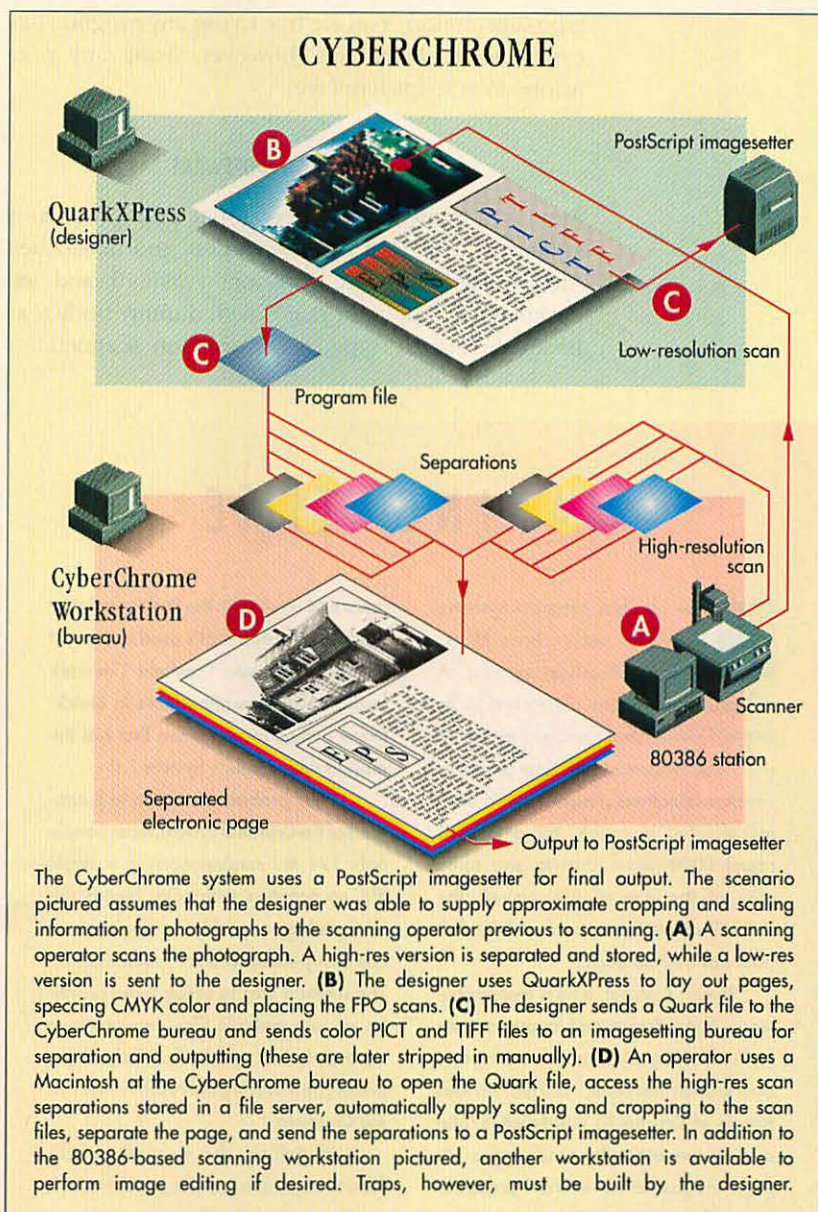
While Visionary offers great tools for color publishers, some users complain about being locked into using XPress rather than one of its brethren, such as PageMaker, and about being restricted to Scitex systems for output. In addition, Visionary requires a major investment. Even with a Mac II in place, the software alone (remember this is a modification of a \$700 program) costs \$8000 if you buy it from Scitex, somewhat less if you buy it from a Scitex service bureau. And it won't open files created with the standard version of QuarkXPress, so you have to buy a copy of the Visionary software for each workstation in your art department.

CYBERCHROME

Since CyberChrome is based on off-the-shelf Macintosh desktop publishing programs, a desktop scanner, and PostScript imagesetter output, one wouldn't expect it to provide the quality of hybrids linked to more traditional prepress systems (see "CyberChrome"). Until recently, it produced "good enough" separations—great for newsprint and fine for many catalogs. The latest images I've seen from this system, however, are top-notch (see "Comparing Costs").

Because CyberChrome equipment is much less expensive than high-end systems, CyberChrome services (there are only a handful at this writing) can offer much better hourly prices than traditional shops—around \$150 an hour plus normal imagesetter output fees (see "Pushing the Limits of Desktop"). Also helping to keep fees down, according to the company, are the time savings made possible by automated production techniques such as machine vision, which helps the scanning operator focus and crop quickly, and automatic stripping. At about \$200,000 for two 80386-based workstations, a network, a file server, software, and an imagesetter, though, CyberChrome is still beyond the range of most in-house operations.

The CyberChrome system includes no provision for trapping, so CyberChrome users will have to do without until Mac publishing programs provide trapping tools. But on the whole, CyberChrome looks like a promising system for the economy-minded.



HELL'S SCRIPTMASTER

Hell's ScriptMaster is based on a PostScript-compatible interpreter from Hyphen running on a UNIX-based Apollo workstation with Bitstream and Agfa Compugraphic PostScript typefaces. The interpreter takes PostScript output from a variety of programs and converts it to Hell's color bitmap format. The prepress shop scans and places images based on a hard-copy comp you provide with the electronic file. Future versions of ScriptMaster will (theoretically, at least) allow for automatic placement of high-resolution scans based on embedded OPI comments.

As with the Crosfield system (which uses the same PostScript interpreter), ScriptMaster won't work with Adobe fonts, so you face all the problems involved in

type substitution. You are free to use any program that can generate PostScript, however, using any non-Adobe PostScript typeface.

ATEX DESIGN SOFTWARE

Atex is a network-based editorial and production system widely used by newspapers and magazines. Atex Design Software runs on a Mac II and lets designers lay out color pages with dummy body text, Bitstream display type, low-resolution scanned im-

ages, and geometric elements such as lines and boxes.

Links to page-layout and color prepress systems are still in the future for Atex; currently the system outputs only to PostScript printers. The system generates a specification sheet listing all page elements and their positions; the designer passes this and a color comp on to a page-makeup operator, who re-creates the page on a prepress system using the actual text.

An interface is in the works to transfer the specifications for size and placement of type columns to an Atex Page Makeup workstation, where coded text can be poured into the columns. Another planned interface will pass specifications for color elements to Scitex systems for assembly and separation. And a third interface will allow full page-geometry to be passed to the Atex PC Page Makeup Workstation. No solid release dates have been set for these interfaces.

If you're not already an Atex customer, this software won't provide a reason to become one. If you do use Atex now, the Design Software gives you the ability to use Macintoshes as inexpensive design workstations.

CROSFIELD/LETRASET STUDIO LINK

Crosfield and Letraset have taken the off-the-shelf approach to prepress with their ReadySetGo/StudioLink combo, which was scheduled for release this summer. Designers use standard copies of ReadySetGo to build pages, and a Crosfield operator on a Mac uses a special version of the program to open the designers' files and save them into three separate files—one for electronic mechanicals, a second for coded text, and a third for PostScript graphics.

These files go to a Sun workstation, where they're converted to Crosfield Linework format (a big, compressed color bitmap). Next, the Crosfield system is used to merge the Linework files with high-resolution scans, to trap desired elements, and to output separations. The Sun system includes a PostScript-compatible interpreter, so designers can use PostScript graphics and type (though not Adobe type, at least not for the time being).

The greatest problem with this combo (aside from the Adobe hitch) is on the desktop side. ReadySetGo doesn't have CMYK specking, only RGB and HSB (the standard Apple Color Picker), plus a Pantone palette. The Pantone colors can be separated into their CMYK equivalents, but this seems a clumsy way to handle things, and certain shades may not be available.

LIGHTSPEED COLOR LAYOUT SYSTEM

The Color Layout System (CLS) from Lightspeed (a subsidiary of Crosfield) has gotten a lot of attention

MAKING TIME

Time Inc. has prepress systems like some people have Macs. With six Crosfield systems of different descriptions networked in its IMPACT center (that's Image Processing and Color Transmission), Time produces seven publications a month plus a variety of other materials, for a total of about 1000 pages. Just to give some idea of the size of this system, the IMPACT center has more than 200 disk packs of 300MB each.

Dennis Chesnel, who is responsible for building design and layout systems for Time's Magazine Manufacturing and Distribution division, started serious testing of Crosfield's ReadySetGo/StudioLink connection by producing a 16-page magazine for internal presentation to Time Inc.'s 200 top executives. The magazine was designed and laid out by the *Sports Illustrated* art department using ReadySetGo.

The Time experiment faces some unique obstacles, the primary one being type. Time has several custom typefaces and thousands of custom characters for its Information International, Inc. (Triple-I) typesetting equipment. To use the same typefaces and special characters with ReadySetGo and StudioLink, Chesnel will have Mac screen fonts created, along with PostScript versions so the designers can proof pages on 300-dpi printers. Time will also need type-

faces that work with the PostScript interpreter on the Sun that's used to convert the Mac files into Crosfield Linework format, not to mention faces in QuickDraw outline format when that hits the market with Apple's System 7.0

Other problems are due to limitations of the Crosfield system. It can handle only 121 tint combinations in a single file, so graphics with color blends run into problems quickly (a single blend can easily eat up 100 tint combinations). The solution was to break those graphics up into multiple files, process them separately through the PostScript interpreter, and overlay the resulting files on the Crosfield.

Jeff Seibert, the man responsible for actually moving all the pages through the system, says that the Mac connection will save immense amounts of time. Time magazine, for instance, is currently created on a Scitex system, then all the page geometry is rekeyed into the Crosfield system to create the actual production pages. Graphics are also laboriously re-created. A simple Illustrator or FreeHand chart that might take five or ten minutes to process through the Hyphen interpreter could take a Crosfield operator two or three hours to manually re-create based on an artist's mechanical. Such reduplication of effort, Seibert hopes, will soon become a memory of bygone Times.

from the design community for its flexible tools and intuitive interface, but it's much more expensive than off-the-shelf packages. (For a description of how the system works, see "Color Layout System.") A complete system begins at \$43,000 and consists of a Macintosh IIx; a Howtek color flatbed scanner; a Mitsubishi color thermal printer (like the QMS ColorScript without the PostScript); the Lightspeed color page-layout software; and a prepress software option for transferring files to Crosfield, Hell, and Scitex systems.

CLS uses Bitstream outline typefaces for both screen display and output, and the prepress link software converts all the type on a page into high-res color bitmap format (Linework on Scitex and Crosfield systems), assuring good correspondence between screen display and output. You can select the resolution of the final bitmap, with several options given for preferred resolutions on different systems.

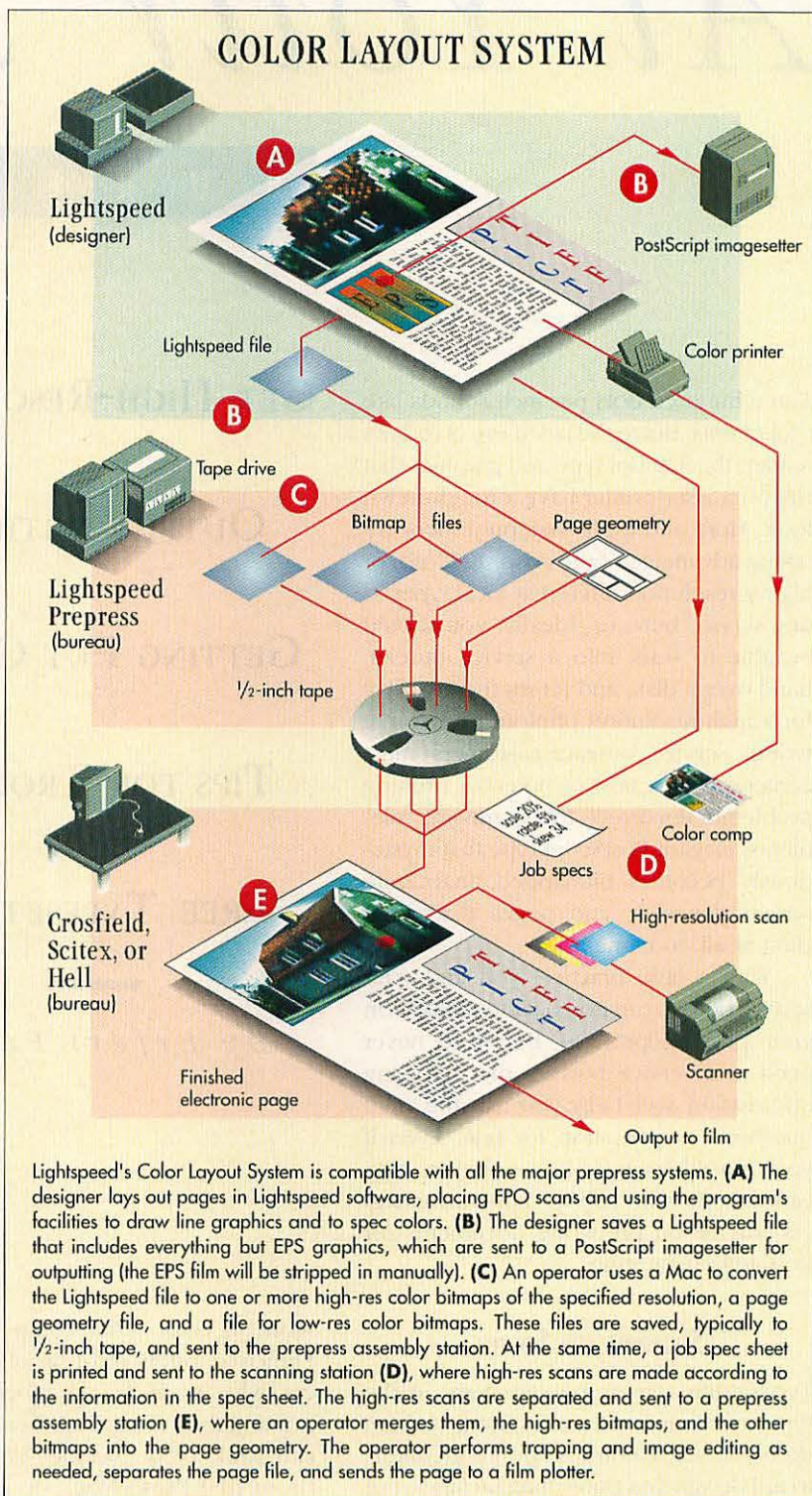
CLS is not an inexpensive solution. Among its advantages, however, is the ability to link to any of the three major prepress systems. There's no prepress link at all for photographs, so these will have to be produced in a conventional manner.

EVOLUTIONARY ROULETTE

For the next year or two, until we see more powerful Macs, faster networks, better scanners, and improved halftoning from PostScript imagesetters, it's going to be difficult or impossible to get *National Geographic* quality using Macintosh/PostScript tools alone. During that time, prepress links will provide a workable if somewhat patched-together method of combining the old with the new, providing more flexibility and control (and perhaps economy) than older methods, and better quality than straight desktop.

Let's face it, though; prepress systems aren't exactly the latest technology. Most of them are based on seventies-era minicomputers, and the software they run doesn't even know about object-oriented graphics—these systems work with huge color bitmaps only, even for lines, boxes, and type. There is a strong argument that says that desktop/prepress links are just stopgap solutions based on outdated technology, filling the hole until fully Macintosh-based systems are available. Systems like CyberChrome, which take today's microcomputers and PostScript imagesetters to the limits, may point the way to future systems.

So be warned. In the long run, the powerful 1970s-era prepress systems may become the dinosaurs of the production world. Think carefully before locking yourself into any system, even if it does provide savings in the short term; it may disappear into a tar pit somewhere between now and 1992. **M**



See Where to Buy for contact information.

.....
Steve Roth operates Open House in Seattle, producing editorial packages for book and magazine publishers. He is the editor of Real World PostScript (Addison-Wesley, 1988).

At Your Service

BUREAU

Three hundred dots per inch sounds like a lot of dots. But to the jaded eye of today's reader, the 300-dpi type and graphics that roll off a laser printer have a rough-hewn look. More and more Mac publishers are taking advantage of the crisp, 1270-dpi or higher resolution offered at local typesetting service bureaus. Ideally, you should be able to walk into a service bureau, hand over a disk, and return the next day for a high-resolution printout. In the real world, service bureau customers must contend with a host of potential printing problems—incorrect fonts, missing elements, elegant PostScript type that mysteriously becomes bitmapped, inaccurate screen densities, and pages that don't print at all, to name a few.

With a little practice, you and your service bureau can iron out the wrinkles in your printing projects. If you've never been to a service bureau, the following information will help you ask the right questions as you shop for one. Even if you've used a service bureau before, you can benefit from service bureau managers' advice on preparing documents for trouble-free printing.

SHOPPING FOR SERVICE

Typesetting service bureaus vary in the types of services they offer, ranging from do-it-yourself Linotronic printout centers to full design and publishing facilities. For example, MicroPrint in Waltham, Massachusetts, can scan artwork at 1000 dpi, which gives you the option of scanning a logo or other artwork rather than redrawing it. Krishna Copy Center in San Francisco specializes in outputting film for color separations and has the equipment and expertise to help publishers who

GET HIGH-RESOLUTION

OUTPUT WITHOUT

GETTING PUT OUT —

TIPS FOR TROUBLE-

FREE TYPESETTING

by Erfert Fenton

work in color. Omnicomp, also in San Francisco, offers color proofs for customers who want to do mockups before printing their artwork. Other services you can find today include file conversion (from IBM PC to Mac), optical character recognition, and slide printing.

While the degree of service varies from bureau to bureau, the common denominator is a high-resolution *imagesetter*, a device that, like the LaserWriter, uses Adobe's PostScript page-description language to image and print text and graphics. Because PostScript is a *device-*

independent language, a document you print on your LaserWriter can also be printed on a high-resolution PostScript imagesetter without being modified. PostScript is also *resolution-independent*; the same document can be printed at 300, 400, 600, 1200, 1600, or 2400 dpi, depending on the capabilities of the output device. Agfa Compugraphic, Varityper, and Monotype, among others, offer high-resolution PostScript imagesetters, but Linotype is the name you hear most often (see "The Lino Line" for descriptions of several Linotype imagesetters).



At the full-service end of the service bureau spectrum, Graphics Plus in Los Angeles offers slide scanning, QMS color printing, training, and even system consulting and sales along with imagesetter outputting.

RUSS WIDSTRAND



Your first task should be to figure out if you really need high-resolution output. If you have budget constraints but don't want to settle for 300-dpi output, you might consider a compromise move. A colleague of mine, for example, produced a 500-page book on the Mac. To send this tome to a service bureau would have been prohibitively expensive, so he printed the pages out about 25 percent too large and had his printer shoot the pages at approximately three-quarters of original size, effectively increasing the resolution from 300 to 400 dpi (see "Output Resolutions").

If you decide you need a service bureau, how do you find a good one? I learned the hard way: I set a 250-page book on the Mac and tried out three bureaus before I found one that was right for me. The first bureau had the right price (around \$5 a page), but the employees weren't familiar with the program I was using, QuarkXPress. After much gnashing of teeth and some missed deadlines, I went to a second bureau, which was more expensive (around \$10 a page), but the employees knew QuarkXPress inside out, were good troubleshooters, and were

well-versed in font management (a must, since my book contained numerous non-Adobe typefaces). Unfortunately, at that time the bureau hadn't upgraded its Linotronic software and was unable to handle my font-intensive project. Finally, I found a bureau that gave me a reasonable price (\$7 a page), was fast, was close to my house, had up-to-date equipment, and was familiar with QuarkXPress. This experience taught me a valuable lesson: if you've got a large project, send small samples to several bureaus and see which one works out best.



SETH RESNICK

Terry Moore of MicroPrint in Waltham, Massachusetts, points out that service bureau customers need to learn about the printing process. "The user is now involved in prepress activities; today's service bureau clients need to become more knowledgeable about prepress and printing technology, especially in the area of color. Many users are looking to service bureaus to answer questions that they really should be asking their printer."

If you don't know where the service bureaus are in your area, start by looking in the phone book under Typesetting or Printing. If the bureaus listed aren't in your immediate area, take heart, many bureaus accept files by modem. If you're a CompuServe subscriber, you have access to Adobe's list of Linotronic-based service bureaus in the United States and Canada. The list can be found in the Adobe Forum; log on and type **Go Adobe**, enter the Service Bureau library, and download the file called SRVBUR.TXT.

Your best bet may be to get a recommendation from a friend or coworker who has had good luck with a particular service bureau. You can also ask members of a local Mac user group which bureau they swear by. While you're shopping around, keep in mind that certain bureaus have more expertise with particular programs or special printing needs such as color separations or halftones.

ASKING THE RIGHT QUESTIONS

The following list of questions combines my own service bureau-hunting experiences with advice from service bureau managers as well as artists, designers, and art directors. Use it to help you find a bureau that meets your publishing needs.

- How much does the bureau charge? Most bureaus charge by the page. Self-service bureaus may also charge by the hour for computer rental time. In an informal survey I made, base prices for an

8½-by-11-inch page on paper at 1270 dpi ranged from \$7.50 to \$15 for a single page, with \$10 to \$12 being typical. Keep in mind that a number of factors can affect price, including page size, printing resolution, whether the output is on film or paper, and whether you're dealing with a full-service or self-service operation. At all of the bureaus I queried, the price per page goes down as the number of pages in a job goes up. For example, one bureau charges \$12.50 for a single page, but \$7.50

a page for jobs of 50 pages or more. Prices for large jobs, such as a book or a catalog, are often negotiable; one bureau I talked to charges \$3.75 a page for orders of 500 or more pages. If you'll be printing a large job, talk to the service bureau manager about getting a volume discount.

Printing at 2540 dpi is more expensive than at 1270 dpi. However, you probably won't need to set your work at 2540 dpi unless you're doing high-resolution halftones or printing to film instead of paper.

Ask if there's a minimum charge. A few of the bureaus I talked to charged a minimum of \$20 per job, even if it was only a single page. Ask about rush charges as well. Most bureaus promise a standard 24-hour turnaround time. If you're on a tight deadline (and what publisher isn't?), bureaus will add anywhere from 50 percent to 400 percent to the base price for output in a few hours.

Find out about extra charges. For example, one bureau I contacted charges a fee for downloading non-Adobe fonts. Many bureaus charge by the minute if a print job exceeds a certain period of time (usually 10 minutes). With recent advances in the Lino's printing capabilities, this usually isn't a problem, but a large,

INFORMATION, PLEASE

The more an imagesetter operator knows about your file, the better the chances of it being printed right the first time.

Before heading for a service bureau, write down the following information about your file. Many bureaus will ask you to fill out a job order form, but you're better off making notes at your Mac, where you have information such as version numbers at your fingertips.

PRINTING CHECKLIST

- Program used (including version number)
- The Mac model and System and Finder version numbers used
- Fonts used

- Number of pages in document
- Page size
- Scaling (100% or resized)
- Printing resolution
- Does document include EPS or TIFF files?
- Line screens?
- Print to film or paper?
- When do you need the output?

Note: Does the document contain numerous fonts, large or complex illustrations, PostScript special effects such as radial fills, or any other characteristics that might cause the file to take a while to print? If so, the bureau may want to schedule the job during off-hours.

complex document with numerous fonts and illustrations might go into overtime. Also, certain PostScript effects (radial fills, for example) tend to take a long time to print. Most of the bureaus I looked at charge \$1 or \$2 a minute for overtime printing. If you think a document may take a long time to print (if it takes a long time to print on your LaserWriter, that's a good clue), talk to someone at the service bureau about any overtime policy.

- If the bureau is self-service, can you make an appointment to use an imagesetter? If not, you may have to wait while other customers finish their jobs.

- What equipment does the service bureau have? An L100 might be satisfactory for simple printing jobs, but not those requiring fine detail and accuracy (see "The Lino Line"). You may also need additional hardware such as a scanner or a slide printer.

- Which RIP (raster image processor) does the service bureau's Lino have? The newer the RIP, the faster the printing will be (a factor if your job goes into overtime). If you use more than eight or ten typefaces (count bold or italic as a separate face) on a page, the original RIP may have trouble printing it. QuarkXPress and PageMaker are particularly memory-hungry, and may cause printing problems on a machine with the RIP 1. While the RIP 1 may pose problems, whether a bureau has the RIP 2 as opposed to the RIP 3 is generally of little practical importance.

- Is someone at the service bureau familiar with the software you're using?

- Does the bureau accept files by modem? If so, does the bureau have a bulletin board set up so you can send files at any time? What baud rate does the bureau's modem use? Large files can take a mighty long time—and time is money—to send at a low baud rate. Does the bureau have a file-compression utility like StuffIt so you can send them compressed files?

- If you have special printing needs, can the service bureau accommodate you? Most bureaus do the majority of their printing on paper; if you need output on film, you may want to look for a bureau that specializes in film work. *Macworld* senior production editor Luis Camus sends *Macworld* type—which is printed on

RESOLUTION OPTIONS

Although there's a quantum leap in quality between 300 and 1270 dpi, it's hard to discern the difference between text set at 1270 and 2540 dpi.

300 dpi (LaserWriter)

This is an example of Garamond Book at various point sizes. Notice how the true contour of the characters deteriorates at lower output resolutions and at smaller point sizes.



Thinnest possible line

Gradation from black to white (effective screen of 71 lpi)



400 dpi (300 dpi photomechanically reduced to 75%)

This is an example of Garamond Book at various point sizes. Notice how the true contour of the characters deteriorates at lower output resolutions and at smaller point sizes.



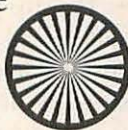
Thinnest possible line

Gradation from black to white (effective screen of 71 lpi)



1270 dpi (Linotronic 300)

This is an example of Garamond Book at various point sizes. Notice how the true contour of the characters deteriorates at lower output resolutions and at smaller point sizes.



Thinnest possible line

Gradation from black to white (screen of 120 lpi)



2540 dpi (Linotronic 300)

This is an example of Garamond Book at various point sizes. Notice how the true contour of the characters deteriorates at lower output resolutions and at smaller point sizes.



Thinnest possible line

Gradation from black to white (screen of 133 lpi)



paper—to one service bureau, and color separations for artwork—which are printed on film—to another.

Although film output is more expensive than paper output, it may save your printer the step of shooting film negatives. If you plan to print to film, talk to your printer first. Some printers prefer to shoot their own negatives, but others will tell you what they need in the way of film.

While many self-service bureaus have troubleshooters who can help out when you encounter a printing problem, if you plan to use an imagesetter on a frequent basis you may be better off developing a relationship with a full-service bureau that will learn your particular printing needs. As Earl Douglas of Publishing Solutions in Rockville, Maryland, points out, "You shouldn't be afraid to pay more for a bureau with experience."

PREPARING FOR PRINTING

A few preparatory steps can save you and the service bureau employees a passel of headaches. In the world of traditional typesetting, a group of people that can include typists, typesetters, artists, proofreaders, and pasteup and layout specialists turns a page of raw text into a finished page. These days, you're in charge of everything from layout to proofreading to setting up color separations. Unless you arrange for additional services, it's your responsibility, not the service bureau's, to make sure your output is complete and ready to be sent to a printer. Before sauntering into a service bureau, you should talk to your printer about issues such as resolution, lines per inch, and whether to print on paper or film.

- Bring a laser-printed proof of your document to the service bureau. When I interviewed service bureau managers, this was the most frequently uttered piece of advice. Without hard copy, service bureau personnel won't be able to tell if your job printed correctly on the imagesetter. If you use a modem to send a file to the bureau you can fax it a copy of the laser-printed document.

If you don't have a laser printer, rent some time on a copy shop's laser printer or see if you can use one at the service



DRAKE SORLEY

Although Krishna Copy is a self-service operation, customers aren't left to their own devices. Employees at shops like this one in San Francisco are always available to answer questions and to troubleshoot.

bureau; an ImageWriter printout will do you no good at a service bureau. If you print on an ImageWriter at home and don't have access to a LaserWriter, you should at least set up the document for PostScript printing to avoid discrepancies in margin widths and line breaks. First, make sure you use a laser printer screen font (Times or Helvetica, as opposed to New York or Geneva). If you can't get a LaserWriter, at least get hold of a LaserWriter driver file and install it on your Mac. Select Chooser from the Apple menu and click on the LaserWriter icon. Then, open the document, choose Page Setup from the Print menu, and click on OK. Check the document's line breaks and page breaks before taking it in to be printed.

To save yourself time and money, carefully proof the laser-printed document. It's much cheaper to print another copy on the LaserWriter than to redo a page on the Lino.

- Find out what file format the bureau prefers. Although most bureaus print documents from the applications they were created in, others find it easier to print PostScript files. Weiner Typesetting in Indianapolis, for example, asks customers to send files in PostScript format; feeding PostScript directly to the image-setter ensures that the bureau's output exactly matches the client's. (Printing PostScript files is a good way to avoid the heartbreak of font ID number conflicts.) To save a document in PostScript, choose Print from an application's File menu, click on OK in the dialog box, then immediately press ⌘-F. A file named Post-

Script0 will appear in the System Folder.

- Find out if the service bureau has the typefaces you used in your document. If not, you'll have to bring in the screen and printer fonts you used. The bureau will download your fonts, print the job, and then throw the fonts away. If you're a frequent customer, most bureaus will purchase a typeface you use regularly.

In general you should send in a list of the fonts found in your document with the job. If you use several fonts—even if they're all Adobe fonts—keep in mind that you may encounter font ID number conflicts (for an explanation of font ID number conflicts, see "Enhancing PostScript Fonts," *Macworld*, May 1989). Service bureau personnel are well aware of the possibility of font ID conflicts, and most bureaus have developed strategies to minimize them. Linotype's new Concert utility eliminates conflicts within the Linotype/Adobe library, and font/DA extenders such as Suitcase and Font/DA Juggler include font-harmonizing utilities.

For best results, talk to the staff at your service bureau and find out how they'd like you to set up your fonts. Almost all of the service bureaus I encountered use Suitcase, Font/DA Juggler, or MasterJuggler to manage screen fonts. These handy utilities eliminate ID number conflicts because they enable you to put just the fonts you will be using in a file outside the System. You needn't own one of these utilities to place your fonts in a suitcase file for the service bureau; you can use Apple's Font/DA Mover to make your own file full of fonts. Using Font/DA Mover alone

won't guarantee a lack of ID number conflicts, however, so I'd strongly suggest buying a font/DA extender.

- Find out if the service bureau's version numbers for applications and system software match yours. Mismatched program and System versions have been known to cause printing problems. Your best strategy is to keep your software up-to-date (send in those registration cards!), since service bureaus are usually conscientious about installing the latest versions.

LINOS VERSUS LASERWRITERS

You might think that a Linotronic image-setter is simply a grown-up LaserWriter, but there are several substantial differences between the two devices. A document that prints just fine on a LaserWriter might not print properly on a Linotronic. The following pointers should help you know what to expect from a Lino.

- Unlike the LaserWriter, the Linotronic won't smooth bitmapped graphics such as those produced in MacPaint. If you want to smooth the jaggies, print the bitmapped graphics on a LaserWriter and manually paste them into the final document.

- While you may be accustomed to letting the LaserWriter convert the Mac's original screen fonts—New York, Geneva, and Monaco—to their PostScript equivalents—Times, Helvetica, and Courier—the Linotronic doesn't offer this convenience. Make sure you've saved your document using the screen fonts for the associated PostScript typefaces.

- Unlike the LaserWriter, the Lino doesn't have Helvetica Narrow built into its memory. The LaserWriter's Helvetica Narrow isn't really a typeface per se; it's a mathematically derived version of the LaserWriter's built-in Helvetica font. Aesthetically speaking, you're better off using Adobe's Helvetica Condensed, which was crafted by a typographer rather than calculated by a set of PostScript routines. If you don't have Helvetica Condensed, some service bureaus have a PostScript utility file, available from Adobe, that condenses the Lino's built-in Helvetica to produce Helvetica Narrow.

- While many laser printers are limited to 8½-by-11-inch paper, the Linotronic can

accommodate larger page sizes. In addition, while the LaserWriter's print area is restricted to 8 inches across, the Lino can print all the way to the edge of the page.

TROUBLESHOOTING

If, despite your careful preparations, the service bureau's output goes awry, the following tips may help you pinpoint the problem.

- If the wrong typeface appears in your Lino printout, you've run into a font ID conflict; to ensure that you don't have to pay for this type of mistake, provide the bureau with a list of all the fonts you'll be using. If a typeface appears in Courier or as a bitmap, the correct face wasn't available to the Lino. Once again, perhaps you forgot to list this font on the service bureau's job form, or maybe the bureau forgot to download the printer font. If you're using a font/DA extender such as Suitcase, ask the service bureau operator to make sure no screen fonts are lurking in the Mac's System file (fonts installed in the System are read before those installed in a Suitcase file).
- If the leading or other spacing on your laser printer proof doesn't match that of the Lino output, you may have encountered mismatched screen fonts. Certain screen fonts issued by Apple have a different amount of built-in leading than the same fonts issued by Adobe. If you create a document with Apple's version of Palatino, for example, then print the document on a service bureau's Lino with its Adobe Palatino, spacing problems will occur. This problem is fairly rare, but you might want to bring in copies of your screen fonts to be safe.
- An even more obscure (but maddening) problem occasionally crops up with Adobe's Garamond typeface. Adobe released two incompatible versions of Garamond. If a document typed in Garamond won't print at a service bureau, convert it to the bureau's Garamond screen font and try printing it again.
- Remember, grays print much lighter on a Lino than on a laser printer. When you're proofing a document on your LaserWriter, keep in mind that the grays will be lighter when printed on an imagesetter, and raise

THE LINO LINE

Many service bureaus use one of Linotype's Linotronic line of PostScript imagesetters. The L300, which can print at 1270 or 2540 dpi on film or on resin-coated (RC) phototypesetting paper, is the model of choice for service bureaus. The older L100 model, although discontinued by Linotype, can still be found in some bureaus; the L100 and the newer L200 have a top resolution of 1270 dpi. The L100 is adequate for printing, say, pages of text and line art, but it might not meet the needs of discerning publishers. The laser diode technology of the L100 and L200 produces larger dots than the L300's helium neon laser at an equal resolution (1270 dpi). If a service bureau you're considering uses an L100 or L200, look at some sample output; chances are it will work out fine unless you plan to print color separations on film, halftones with a screen of over 120 lines, or other output that requires high-resolution precision. Linotype's L500, which prints at 1693 dpi, supports wide paper and is suitable for printing newspapers and the like.

The Lino's model number isn't the only factor you need to consider in your search for a service bureau. Which RIP (raster image processor) a bureau's Lino has may affect your decision as well. The RIP is a mechanism that converts PostScript's descriptions of lines and

curves into the map of dots that makes up a printed page. The original RIP, released in 1985, uses a 68000 processor board and has 1MB of RAM. The RIP 2, which came out in 1987, uses the faster 68020 processor, employs a newer version of PostScript, and has 6MB of RAM and an 80MB hard disk that allows it to store more downloadable fonts than the earlier version. The new RIP 3, released this year, offers further speed and storage enhancements over the RIP 2; according to a Linotype representative, the RIP 3—which uses the 68030 chip—offers a 20 percent speed improvement over the RIP 2 in text processing and a speed improvement of up to 300 percent for graphics, as well as more hard disk space for storing fonts. At the time this was written, most of the bureaus I surveyed were using the RIP 2 and had a RIP 3 on order.

Linotypes come with a basic set of built-in fonts from Adobe (Linotype manufactures most of Adobe's typefaces, and the two companies co-market the faces); additional fonts from Adobe or other PostScript font vendors can be downloaded to the device. Adobe/Linotype fonts can be permanently downloaded to the Lino's hard disk; fonts from other manufacturers are temporarily downloaded as needed. Most Linotronic-based service bureaus offer Adobe's entire typeface library, or at least a substantial portion of it.

the percentages if necessary.

- If you've placed graphics in TIFF or EPS format into a document created with a page-layout program, be sure to bring the original files with you to the service bureau. In many cases, the TIFF or EPS image isn't included with the page-layout document, and the original file must be accessed during printing. Believe me, it's frustrating to go into a service bureau to pick up a document, only to see a blank space or a bitmapped image where an illustration was supposed to be.
- If you print a large, complex page at 2540 dpi, you're pushing the limits of the Lino. Check your printed document carefully; occasionally a piece of type or

graphics will drop out without generating a warning.

Although service bureaus vary in their equipment, expertise, and the types of services they offer, one piece of advice holds true for all service bureau users: talk to someone at the bureau and find out what they need from you. After that, you'll have an easier time getting what you need from them. ■

.....
Erfert Fenton is a Macworld contributing editor and the author of The Macintosh Font Book (Peachpit Press, 1989), which was set on a service bureau's Linotronic L300.

START WITH Utilities

*How to
survive the
flood of
self-loading,
RAM-resident
utilities*

by Robert C. Eckhardt

Self-loading utilities make souping up the Macintosh's system software no more difficult than telling a car salesperson that you want the red car with air-conditioning. If you want the illusion of a larger screen, you need only copy the utility Stepping Out II to your System Folder. If you want a sophisticated keyboard enhancer (like QuickKeys) or an improved version of the Scrapbook (such as MultiClip), just drop in another file or two.

But the ease with which system software enhancements can be added, together with the great number of enhancements available, is a double-edged sword. Although they can improve the way the Macintosh operates, the abundance of utilities also threatens to make life with Macintosh more complex. As the number of self-loading utility programs in the System Folder increases, their behind-the-scenes manipulations increase the potential for problems. Since two incompatible self-loading utilities can be as debilitating as a flat tire, Macintosh owners should understand how they work, how to manage them, and how to fix problems when they arise.

COMING TO TERMS

The term *utility* describes a great variety of software. Many utility programs behave like standard applications, running only when you request them. Desk accessories are "off" until you select them from the Apple menu and thus turn them "on."

But many utilities run constantly in the background. For some time, you could only install these RAM-resident utilities in the System file manually, using an installer program. But System 3.0 introduced self-loading RAM-resident utilities called start-up documents, or more commonly, INITs (initialization resources). To use an INIT

like On Cue or MultiClip, you need only copy it to the System Folder; it then runs automatically every time you switch on the Mac. Manually installed RAM-resident utilities are now quite rare, while the variety of INITs has mushroomed.

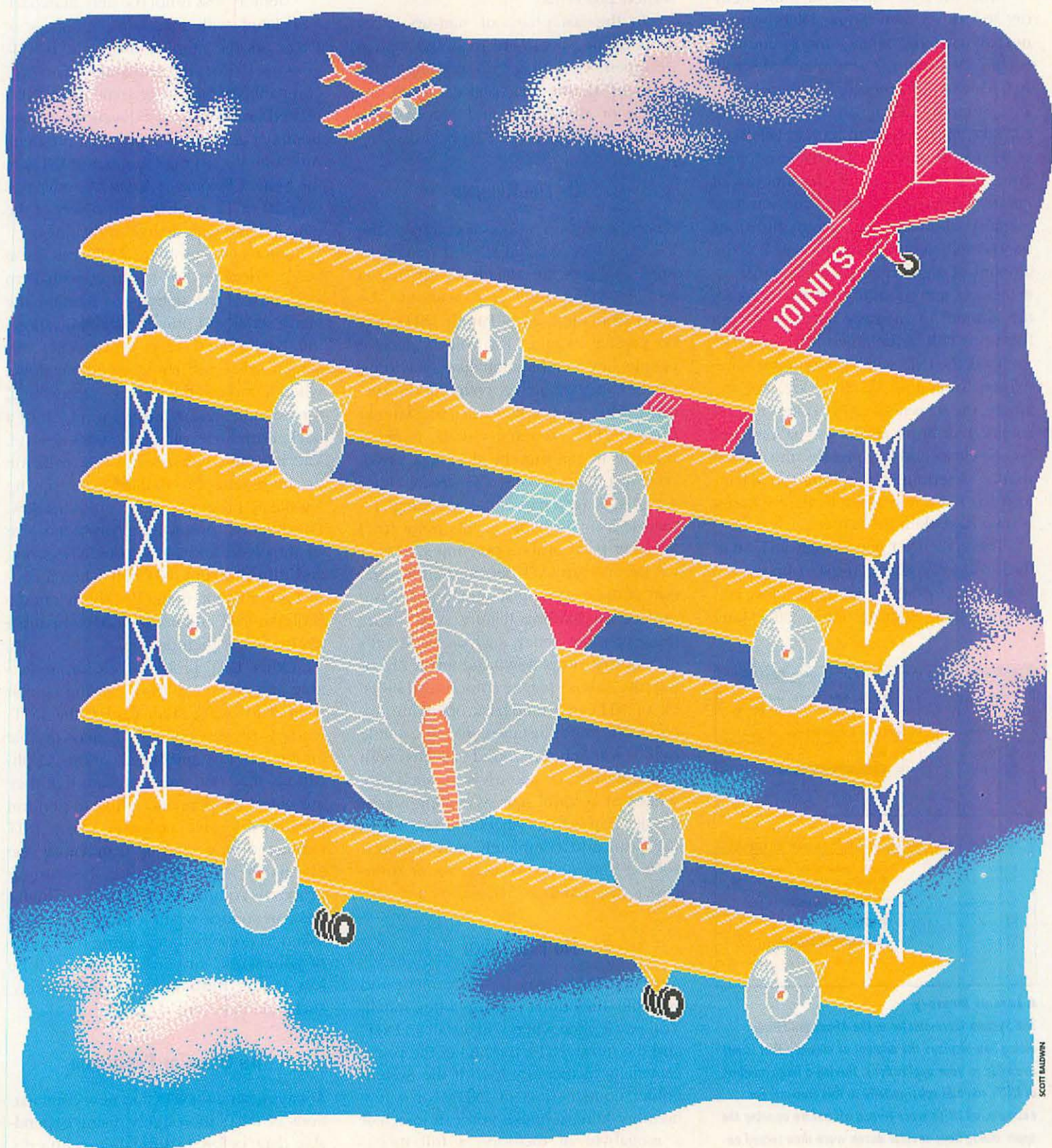
INITs are often confused with CDEVs, another type of file stored in the System Folder. A CDEV (Control Panel device) displays an icon in the Control Panel; a click on this icon causes the CDEV to display a set of software or hardware controls. The General CDEV, for example, can set the date and time stored in the Mac's parameter RAM, the speaker volume, and so on. Confusion arises because some INITs, such as Pyro and QuickKeys, are both INITs and CDEVs; they are start-up documents, but they let you control their activities through the Control Panel.

STARTING UP INITs

An INIT is defined, in layperson's terms, as a piece of code that the Macintosh loads at a certain point in the start-up process. Thus, in order to understand what makes INITs tick, we need to take a brief look at the Macintosh start-up sequence.

In the first phase, the Macintosh locates and reads the start-up disk's boot blocks (a small but critical collection of information), surveys the hardware to make sure it is operating correctly, and begins to read the System file and to load parts of it into memory. For those of us looking in from the outside, landmarks for this phase are the smiling Mac icon and the welcome message or, if you have one, the start-up screen.

Any INITs in the System Folder are read and loaded into memory during the second phase of start-up. If two or more INITs are stored in the System Folder, they are dealt with in the Mac's version of alphabetical order (in which symbols like #, \$, %, and & are listed first, then numbers,



SCOTT BALDWIN

then letters). As each INIT is loaded, any number of things may happen; but three things are of special interest.

One, the INIT will ask for some memory to call its own. Some INITs require next to nothing, while others require a significant amount. Capture and SFScroll-Init, for example, require less than 10K or 15K. Stepping Out II, on the other hand, can take anywhere from 100K to 16MB out of service, depending on what size screen you want to emulate. If the amount of memory requested is small, the standard memory allotment for system functions may be sufficient to accommodate it. If the amount of memory requested is large, or if there is not enough memory to spare, the amount of memory used by system functions will be enlarged as required.

Two, the INIT will probably alter some existing operating system code. For example, the screen saver Pyro alters a ROM routine that applications use to intercept mouse clicks and key presses; the altered routine determines how long the Macintosh has been idle and tells Pyro when it is time to darken the screen.

Three, the INIT may display an icon in the lower-left corner of the start-up screen. Not all INITs do this, and many allow you to turn their start-up icons off. Many

people dislike having their start-up screens peppered with icons, but icons can be used to diagnose certain kinds of INIT-related problems.

In the last phase of start-up, other parts of the System are read and loaded into memory. (On screen, nothing much happens during this phase.) Then the Finder or MultiFinder and one or more start-up applications are launched.

UP AND RUNNING

Once the start-up process is complete, the loaded INITs are "alive," and remain so until you turn the Macintosh off (or, as with EZ-Menu, until you deactivate the utility from the Control Panel). INITs may be passive, waiting for you to press a certain key combination like QuickKeys. Or they may be active, counting the seconds since the last keystroke as Dimmer does or, like Stepping Out II, working furiously to maintain the illusion of a two-page display on a half-page screen. Either way, INITs are a part of the operating system, indistinguishable at this point from all other parts of the operating system.

Because an INIT becomes an integral part of the operating system, an INIT can replace an existing feature with something you like better, such as EZ-Menu's menus that drop down automatically or Capture's ability to take color screen shots. Or an INIT can extend basic operating system features, for instance, injecting a little humor with a funny sound (selected with SoundMaster), or add a visual, such as a school of colorful fish swimming across the desktop (using Fish, of course). Or an INIT can add completely new features, such as Vaccine's virus detector, or Multi-Disk's disk partition manager.

NO FREE LUNCH

Although INITs may be convenient and versatile, they don't provide a free lunch. You pay a price when you install an INIT, and the more INITs, the higher the price, especially in memory loss. If the System Folder contains lots of INITs (or a few memory-hungry ones), you can lose half a megabyte of memory, a full megabyte, or more. To determine approxi-

mately how much memory the INITs are eating up, consult the About the Finder dialog box (see "A Loss of Memory").

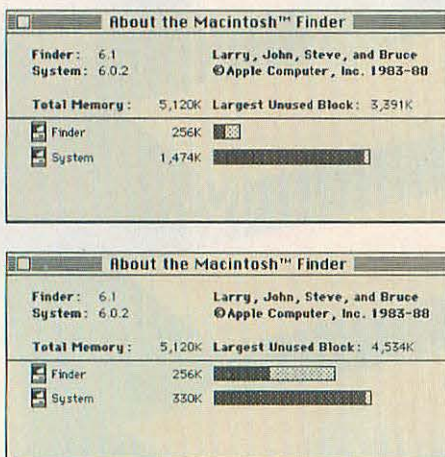
Memory loss is not the only drawback associated with increasing numbers of INITs. As the number of installed INITs goes up, so does the probability of an INIT compatibility conflict or some other INIT-related problem. And it doesn't take huge numbers of INITs to generate a problem. Although the average number of INITs in the System Folders of *Macworld* editors is only 10 or 12, over three quarters of the editors have experienced difficulties.

Some of the problems INITs can cause are predictable. For instance, with Pyro you must select options to monitor the Mac's serial and printer ports thus allowing background tasks. Otherwise, this screen saver will shut everything down when it darkens the screen—terminating, for example, an unfinished print job or a background telecommunications session. Vaccine can confuse software installation programs and prevent them from copying legitimate programs onto your hard disk. Fortunately, predictable problems are easily solved: know how your INITs work, and turn problem INITs off when a conflict is imminent. Better yet, throw out the problem INIT and use a more compatible alternative, if there is one.

Other INIT problems are unpredictable and can range from causing benign trouble to being fatal. During the INIT-loading process, one INIT may disable another. In less amiable situations, applications may (incorrectly) claim that they are out of memory and refuse to perform memory-intensive tasks. A major INIT conflict during start-up can cause the Macintosh to crash before the start-up process is completed. Fatal incompatibilities can surface when a problem INIT is asked to do something during the course of your work; any unsaved data will be lost in the ensuing crash. Fortunately, such calamities are rare.

AN OUNCE OF PREVENTION

Always test new INITs and new combinations of INITs thoroughly, using expendable data, before trusting them with valuable work. If you have installed a new



A Loss of Memory

The System thermometer in the About the Finder dialog box displays the amount of memory that is not available to your applications. Having a large number of INITs can add substantially to this amount. For example, all INITs were turned off before opening the upper dialog box; several dozen were then turned on, with the results shown in the lower dialog box.

THE INIT HALL OF FAME

I polled *Macworld* editors to determine the state of the INIT among state-of-the-art Mac owners. Although the number of INITs used by *Macworld* editors is large, only about 20 were used by two or more of the people surveyed. Of these, 12 were mentioned often enough to deserve a place in the INIT Hall of Fame. Many are shareware. You can download them from a bulletin board or get them from your local user group. Information about how to pay for them can usually be found in the product file.



ON CUE

(ICOM Simulations, \$59.95)

This is clearly the most popular INIT among *Macworld* editors. By creating a pop-up menu containing the names of applications and often-opened documents, On Cue eliminates the need to search through folders and files.



SUITCASE II

(Fifth Generation Systems, \$79)



MASTERJUGGLER

(ALSoft, \$89.95)

Were it not for competition from MasterJuggler, Suitcase II would head this list. Both programs enable you to add unlimited numbers of fonts and DAs to menus, as well as F-keys and funny sounds.



CAPTURE

(Mainstay Software, \$79.95)

Capture is an elegantly designed replacement for the Mac's standard screen-shot utility. It lets you select the portion of the

screen you want to save, and saves both color and black-and-white screens in PICT format.



QUICKKEYS

(CE Software, \$99.95)

With QuickKeys, you can assign almost any task to just about any key combination; people with extended keyboards can use it to give the ⌘ key and the function keys something to do. QuickKeys can also assign new keyboard equivalents to menu commands and automatically insert right and left quotation marks.



EZ-MENU

(part of MockPackage Plus Utilities; CE Software, \$49.95)

EZ-Menu makes menus drop down automatically whenever the pointer passes over the menu bar. Although it's confusing at first, you will find it faster and more efficient once you get used to it.



SFVOL INIT

(shareware)



FILEMAGIC

(Magnus Corporation, \$99)

These two utilities make file selection easier. SFVOL INIT improves on the Drive button by adding a pop-up menu listing all mounted disks and disk partitions in Save and Open dialog boxes. FileMagic converts the hierarchical menu in Save and Open dialog boxes into a pop-up menu containing submenus of commonly needed files and folders and a selection of file and folder management commands.



SUPERCLOCK

(freeware)

This INIT places a digital clock in the menu bar; click on it and it displays the date. You can also use SuperClock as a timer or an alarm clock, and you can select a number of special features from the Control Panel.



VACCINE

(CE Software, freeware)

Only the foolhardy fail to use Vaccine, or its commercial (and more robust) counterpart, AntiToxin (Mainstay; \$99.95). Both help prevent virus infection.



SFSCROLLINIT

(freeware)

With SFScrollInit, Open and Save dialog boxes open not to the top of the scrolling file list, but to the place in the scrolling list where you last used the dialog box. Rebound (shareware), a further refinement of this INIT, is also popular.



PYRO

(Fifth Generation Systems, \$24.95)

This utility darkens the screen after a predetermined period of inactivity, thus preventing screen burn-in. A new shareware utility, Moire, from John Lim and ThinkTech of Australia, has recently swept *Macworld* offices, threatening to displace the long-standing Pyro. Some prefer the slightly different approaches of two other screen savers: Flex (shareware) and Dimmer (part of Screen Gems; Microseeds Publishing, \$79).

version of the System, thoroughly test your INITs once again; System updates have been known to make previously compatible INITs incompatible. Also, avoid installing two or more INITs that perform essentially the same task, such as Berkeley System Design's Stepping Out II and Radius's monitor-display INITs. The two utilities may crash the computer as they argue over who's in control.

You must be sensitive to memory considerations as well. If you have a 1MB

machine and the System allocation listed in the About the Finder dialog box is 500K, for example, programs such as FullWrite Professional and HyperCard won't run, while other programs may have very little room to spare. So, whenever you add INITs to the System Folder, make sure there's still enough memory available for your applications. And if you no longer use an INIT, remove it from the System Folder so that it doesn't needlessly occupy precious memory.

DEALING WITH PROBLEM INITs

Even with the best preventive medicine and careful memory management, you may encounter two INITs, or an INIT and something else, that cannot coexist. In some cases, observing the problem will help locate the offending INIT. For example, if the problem only occurs when using QuickKeys, then QuickKeys may be at fault. If the computer crashes during the start-up sequence, watch the INIT icons as

INITs FOR EVERY OCCASION

	Product	Company	Price	Description
Font and DA managers	Suitcase II	Fifth Generation Systems	\$79	Increases number of fonts/DAs
	MasterJuggler	ALSoft	\$89.95	Increases number of fonts/DAs
INIT managers	Aardvark	Microseeds Publishing	\$39.95	Turns INITs on and off
	Aask (MockPackage Plus Utilities)	CE Software	\$49.95	Turns INITs on and off
	INITPicker	Microseeds Publishing	\$49	Picks the loading order of INITs
	Inix	Natural Intelligence	\$79.95	Turns INITs on and off
Menu additions	EZ-Menu (MockPackage Plus Utilities)	CE Software	\$49.95	Makes menus drop down when cursor touches menu bar
	HierDA	n/a	freeware	Converts Apple menu to hierarchical form
	MenuFonts 2	Beyond	\$49.95	Displays each font name in its own font
	On Cue	ICOM Simulations	\$59.95	Creates custom menus
	Powermenus	Magic Software	\$79.95	Provides pop-up list of application menus
	Staircase	n/a	freeware	Opens menus from keyboard
	SuperClock	n/a	freeware	Date/time/alarm clock in menu bar
	TOM/INIT	Advanced Interface Programming	\$59	Creates tear-off menus
File and folder managers	FileMagic	Magnus Corporation	\$99	Adds files, folders, commands to Open/Save dialog boxes
	Findswell	Working Software	\$59.95	Finds files
	MultiDisk	ALSoft	\$69.95	Creates and manages disk partitions
	QuickFolder	n/a	shareware	Creates folders from Open/Save dialog boxes
	Rebound	n/a	shareware	Saves your place in GetFile scrolling list
	SFScrollinit	n/a	freeware	Saves your place in GetFile scrolling list
	SFVol INIT	n/a	shareware	Creates volume menu in Open/Save dialog boxes
Macro makers	F1F4	n/a	shareware	Activates keys F1-F4
	Icon-It	Olduvai	\$79	Attaches keystrokes to icons
	QuickKeys	CE Software	\$99.95	Provides comprehensive macro making
	Tempo II	Affinity Microsystems	\$149.95	Provides comprehensive macro making
Screen savers	Dimmer (Screen Gems)	Microseeds Publishing	\$79	Dims the screen in variable levels
	Flex	n/a	shareware	Displays twisting geometrical shape
	Pyro	Fifth Generation Systems	\$24.95	Displays fireworks or clock
System replacements	Capture	SuperMac Technology	\$79.95	Provides background printing
	MultiClip	Olduvai	\$99	Clipboard and Scrapbook replacement
	SPAMM	Mainstay Software	\$79	Replaces Mac screen-shot utility
	SuperLaserSpool	Bravo Technologies	\$149.95	Speeds up arithmetic operations
Writing aids	BigThesaurus	Deneba Software	\$99.95	Provides thesaurus at the press of a key
	Thunder II	Electronic Arts	\$79.95	Checks spelling interactively
Work protectors	AntiToxin	Mainstay	\$99.95	Protects against virus infection
	AutoSave II	Magic Software	\$49.95	Automatically saves your work
	Guardian (SUM)	Symantec	\$99.95	Tracks file data for easy disk recovery
	SAM	Symantec	\$99.95	Protects against virus infection
	Vaccine	CE Software	freeware	Protects against virus infection
	VirexGuard (Virex)	HJC Software	\$99.95	Protects against virus infection
Screen managers	Front & Center	n/a	shareware	Centers dialog boxes under cursor
	Stepping Out II	Berkeley System Design	\$95	Makes small screen act larger
	Windows	n/a	freeware	Adds window menu to menu bar
	WindowMagic (FileMagic)	Magnus Corporation	\$99	Adds window management into Apple menu
Fun stuff	ColorDesk (Screen Gems)	Microseeds Publishing	\$79	Selects custom desktop background
	Cursor INIT	n/a	shareware	Colors cursor with Apple's stripes
	Earth	n/a	shareware	Replaces Apple with spinning globe
	Fish	Bogus Software	freeware	Makes colorful fish swim on desktop
	SoundMaster	n/a	shareware	Selects custom system beeps
	Talking Moose	Steve Halls	\$20	Provides pithy sayings from cartoon moose

they appear on the screen. Assuming all your INITs display an icon, the INIT that caused the crash will be either the one that displayed an icon immediately prior to the crash, or, more likely, the next INIT in the launch sequence.

If the problem does not point to a specific INIT, you'll have to use trial and error to locate the troublemaker. First, turn off all the INITs to make sure that the problem is indeed INIT-induced. (One way to turn an INIT off is to put it in a folder other than the System Folder and restart the Mac. Another, easier, way to turn INITs off and on is to use an INIT manager like INITPicker or Aask.) If the problem persists, the perpetrator is probably not an INIT. If the problem disappears, then INITs are probably at least part of the problem, and there are several things you can try to resolve it.

First, turn the INITs off one by one, and try to duplicate the problem after each INIT is turned off, until the problem goes away. The INIT that was turned off immediately before the problem cleared up is probably the guilty party or one of the guilty parties. This may be an easy way to solve the problem, but it may be just a kludge. Some problems can be cleared up by turning off any INIT (or any five or six INITs). These INITs may not be the actual source of the problem—an example of the vagaries involved in dealing with numerous INITs.

Once you've isolated the INIT (or INITs) causing the problem, there are several ways you can effect a cure. Try changing the loading order of the INITs, either by renaming them so their alphabetical order matches a new, experimental loading order, or by using INITPicker to change the loading order without renaming. Change the order randomly, or rotate the list so that the INIT that had been launching last becomes the one launched first. Try a number of different combinations, testing each one to see if it solves the problem. If reordering loading doesn't work, and if the problem is System-related (if it occurs in a Save or Open dialog box, for example), replace your System file with a new one. If replacing the System file doesn't help either, you may be the victim of an esoteric problem

requiring special attention and special repair tools (see "High Technicalities").

If nothing works, you are left with two less-than-ideal alternatives. One is to call the manufacturer of the errant INIT to see if an updated version exists that solves the problem. If it does, great; if not, and the problem is not otherwise solvable, your call may inspire the manufacturer to create an updated version. The other alternative is to remove the offending INIT from your System Folder for good. It's not a perfect solution, but it solves the problem.

WHAT'S INIT FOR YOU?

Nowadays, INITs are a fact of Macintosh life. Many hardware manufacturers supply INITs with their products. INITs pro-

HIGH TECHNICALITIES

Two nonspecific, INIT-related problems are difficult to diagnose and require special tools to resolve. Both problems have similar symptoms: applications complaining of not enough memory, oddball crashes, generally weird and inexplicable behavior. If your Mac's problems fit this description, and all other attempts at a cure have failed, try the following suggestions.

One possible reason for your difficulties is that the System heap (the part of RAM devoted to System file resources, INIT code, and the like) does not contain enough free memory. The System thermometer in the About the Finder dialog box is not a reliable indicator of the amount of free memory for INITs in the System heap, so don't bother looking there. Instead, use Widgets (part of MockPackage Plus) to increase the size of the System heap.

If you have lots of memory to spare, increase the System heap by 250K. If your Mac only has 1MB or 2.5MB, try adding 64K or 125K. If this doesn't resolve the problem, reset the System heap size to what it was originally, and look elsewhere for a cure. If it does solve the problem, slowly reduce the heap size, in 16K increments, until the problem reappears. Then increase it again by 16K in 1MB or 2.5MB Macs or

by 64K in Macs with 4MB or more.

Keep in mind, however, that increasing the size of the System heap may result in other problems, especially in 1MB or 2MB Macs. Some applications may not run at all if the System heap is too large, some may no longer be able to open large documents, and the number of applications you can run under MultiFinder may be reduced. If the cure is as bad as the disease, it may make more sense to reduce the number of installed INITs rather than increase the size of the System heap.

The other possible, though less likely, cause of your problems may be that there are too many open files. Some invisible files are open all the time. For each mounted disk or disk partition, the System software keeps several invisible files open. If you use Suitcase II or MasterJuggler, they may keep 12 or more suitcase files open. Other INITs, open DAs, and open applications may keep a hidden file or two open as well. All those open files, including invisible ones, add up and may come close to the System's limit.

If you use Suitcase II, you can raise the limit on open files and see if that alleviates your problems. If too many open files is the cause of your distress, this adjustment should fix the problem immediately.

test against viral infection, improve file management, dim the display, add new menus to the menu bar, convert complex tasks into a single key command—you name it. True, INITs are not without their faults, and they can make life with Macintosh a little more complex. But without INITs, we'd all be driving a basic black Ford. With them, we can each drive a red roadster convertible with a custom interior—just watch out for those speeding tickets. **M**

See *Where to Buy* for contact information.

.....
Robert C. Eckhardt is the author of *The Fully Powered Mac* (Brady Books) and is a Macworld contributing editor.



Aside from being a tad easier to install than a satellite, the Hayes Smartmodem 2400M™ for the Macintosh® II and Smartcom II® for the Apple® Macintosh make up the most advanced communications system you can put inside a Mac®.

With this modem and software package, you can set up an extensive Macintosh computer work group system through a feature called HayesConnect.™ It allows any Macintosh access to the Smartmodem 2400M across an AppleTalk® Network. Which means all Macintosh computers on the Network will be able to communicate with or without

THE ONLY COMMUNICATIONS SYSTEM MORE ADVANCED THAN OURS WON'T FIT INSIDE YOUR MAC.

a modem of their own. This makes for extremely efficient office communications.

Then, to make them even more efficient, the system offers Smartcom II for the Macintosh. It's the only software designed to take full advantage of the power and graphics capabilities of all of the computers in the Macintosh family. For example, you can program your own on-screen buttons to create a personalized user interface. You also get features like moveable icons, custom color selection and full support of ImageWriter® and LaserWriter® for incredible graphics. You can even run the system unattended using an Autopilot feature. Of course, there is much more you can do with a few simple clicks on standard, easily identifiable icons.

By now it's probably clear that whether they're just used with the Macintosh II or shared by Mac computers on an AppleTalk Network, the Smartmodem 2400M and Smartcom II make a communications system that can't be beaten. At least not by anything on this planet.



Hayes®

For your nearest Hayes Advanced Systems Dealer, call 800-635-1225. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348.

Apple, Macintosh, Mac, ImageWriter, LaserWriter and AppleTalk are registered trademarks of Apple Computer, Inc.
© 1989 Hayes Microcomputer Products, Inc.



REVIEWS



SUPERCARD 1.0

Hypermedia Development Environment

Pros: Full color support; object-oriented drawing tools; multiple, resizable windows; customizable menus; innovative resource handling; and the ability to create royalty-free, stand-alone applications.

Cons: Slow; steep learning curve; mediocre documentation. **Company:** Silicon Beach Software. **Requires:** Mac Plus; 2MB for color; System 6.0. **List price:** \$199.



It takes a lot of nerve to challenge a program like HyperCard. To compete successfully with a product that is free, distributed by Apple, and well established, Silicon Beach Software needed to create an application that would effectively extend the boundaries of the hypermedia development environment. SuperCard does just that. Adding full color support; object-oriented drawing tools; multiple, resizable windows; customizable menus; innovative resource handling; and the ability to create royalty-free, stand-alone applications, SuperCard will win over a fair number of HyperCard fans. I am still waiting for the ideal development tool, but in the meantime, SuperCard fills in many of the blanks.

Among its strengths, SuperCard counts full gray-scale and 8-bit color support. Each card and background can have its own palette of up to 256 colors or shades, which are stored as color-look-up-table (CLUT) resources. When you import an image from another color application, SuperCard lets you choose whether or not you want to add the new CLUT resource.

A problem sometimes occurs, however, when you move between cards with different palettes. There is often a delay

and colors may appear randomly as one CLUT replaces another. The Select Colors command attempts to alleviate this problem by letting you choose from among five color-matching levels. The highest, Perfect, completely replaces one palette with the next. The lowest of the five levels, None, eliminates the flash between cards by forcing the program to draw the new image with any matching colors from the old CLUT—a good solution for cards with similar palettes.

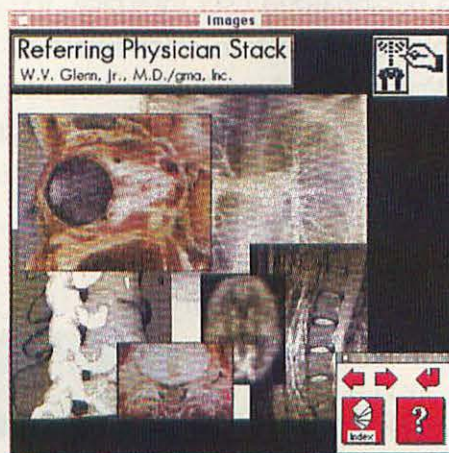
SuperCard incorporates a number of new animation techniques. Using the Cycle command, you can specify the number of times and the rate of speed at which a card rotates through all or some of the colors in its current CLUT. The Move command lets you guide an object (a button, field, or graphic) from one pixel location to another; from one relative pixel location to

another; or, most usefully, along the points of a previously defined polygon. You can record, store, and play animations in PICS format (or import PICS files from programs such as Super 3D or MacroMind Director) or record animations in an accelerated animation format called STEP. You may run into memory problems, however, with the byte-hungry STEP files.

Like HyperCard, SuperCard lets you create, edit, and store bitmapped images using the standard 72 dots per inch, but you can also include object-oriented images that are stored as mathematical equations. Object-oriented drawings take up less disk space, they are easy to edit, and they can be printed using the resolution of your output device (300 dpi on most laser printers). SuperCard even includes an AutoTrace tool that lets you turn bitmapped graphics into object-oriented images. Used with the ⌘ key, AutoTrace is particularly useful; simply click within a shape to trace it from the inside.

My favorite SuperCard trick is the ability to write a script for *any* object, even a graphic or a field. In HyperCard, it is tedious and troublesome to define an irregular object (such as a circumscribed area on a map) as a button. With SuperCard, it is easy to attach a script to any object or shape.

Having color, draw, and new animation abilities should certainly please HyperCard veterans, but the program structure and vocabulary will take a bit of getting used to. In SuperCard parlance, a Window has one or more cards and is roughly equivalent to a stack in HyperCard. More than one Window can be displayed at one time, and several Windows may be included in one document or application, called a Project. This is a real boon to hypermedia developers previously restricted to HyperCard's single-window



What's Up, Doc?

Peter Samuel Marx and William V. Glenn, M.D., of the Harbor/UCLA Medical Center in Los Angeles import radiology images—CAT scan, MRI (magnetic resonance), X ray, cryosections, and ultrasound scan—into SuperCard from Grease Pencil, a medical-imaging-workstation program they wrote. They have found that disseminating information in this format is much less expensive than more traditional methods.



SuperHeart

C. Carl Jaffe, M.D., and Patrick J. Lynch, M.S., of the Yale University School of Medicine used SuperCard in conjunction with Super3D to develop an interactive teaching aid for courses in introductory echocardiography.

display with its 512-by-342-pixel size.

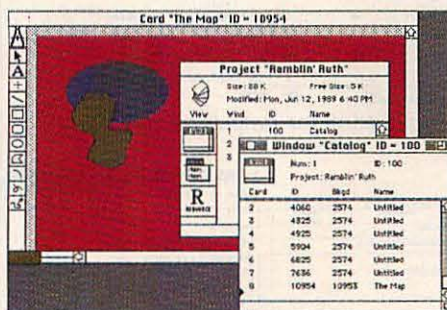
To create a project you alternate between two programs, SuperCard and SuperEdit. The SuperEdit environment is optimized for creating and editing Projects; SuperCard, while it does allow some access to graphic and object tools, is primarily designed for running Projects. You can bounce back and forth between the two applications fairly easily, but there are drawbacks. Speed, for one. Security, for another. While SuperCard automatically saves changes, SuperEdit does not. In SuperEdit, you must continually repeat the mantra, "Save, save, save."

You can install a Runtime Editor into SuperCard that allows access to many of SuperEdit's operations, but this is not a viable solution for the serious SuperTalk programmer. Among other shortcomings, the Runtime Editor is much slower than SuperEdit; you can't add Windows, resources, or backgrounds; and you can't use keyboard shortcuts.

In SuperEdit, you have access to scrollable windows called Overviews that list the Windows, cards, menus, menu items, and resources in the current Project. While they are a bit awkward at first, these

Overview lists prove to be one of SuperCard's better additions. You can view, shuffle, and cut and paste Project elements (even resources such as cursors, sounds, XCMDs, and XFCNs), a task that tries the patience of HyperCard authors.

Copying and pasting between scripts is just as simple. There are Script Editors for each SuperCard object and you can have as many open as your Mac's memory allows. At the top of each Script Editor are five pop-up menus containing all the SuperTalk terms that you can use in writ-



Overview Ease

SuperEdit displays various Project elements in hierarchical Overview windows. In this example, the Project Overview for "Ramblin' Ruth" lists the Windows, Menus and Menu Items, and Resources.

ing scripts. The sheer length of these menus can be distracting, but once you choose a term, it is immediately inserted into the current script, along with automatic formatting. You can set script fonts and tabs, and you can use the Comment and Uncomment commands to insert or remove remarks concerning the scripts for future reference.

My chief complaint is that SuperCard doesn't really convert HyperCard stacks into its own environment as seamlessly as Silicon Beach would lead us to believe. Text doesn't always appear in target fields as it should. Dragging selected objects from one point to another doesn't always work as one would expect.

Which brings us to the documentation. While most conversion difficulties can be solved through trial-and-error changes to the script, the manual offers few clues to many of the dilemmas faced by the new SuperTalk programmer. The index is scant; a program this complicated deserves documentation at least twice as comprehensive, particularly for the user who might not be familiar with HyperTalk's protocols. While offering much too little information on many topics (animation techniques, for example), the documentation gets downright labyrinthine in its descriptions of ink effects such as srcXor and notSrcBic.

My wish list for the next version of SuperCard would include an augmented manual; an undo command; a show PICT command; color field text; color button icons and button names (still black-and-white); and sticky buttons (the ability to attach a button to a word in a scrollable window). I'd like it to be more compatible with already-installed INITs (opening SuperCard caused my Mac to crash until I removed a couple of offending INITs), and I can't help wishing it would run better on a 1MB system.

Still, SuperCard pushes hypermedia into the color realm, and it offers programmers many tools and options currently unavailable in HyperCard. The implementation may prove difficult for some to adopt quickly, but SuperCard goes a long way toward facilitating interactive hypermedia development.—*Suzanne Stefanac*
See Where to Buy or circle 876 on reader service card.

MICROSOFT WORD 4.0

Word Processing Software

Pros: Easier, more powerful interface than Word 3; configurable menus and ⌘-key combinations; new table feature; WYSIWYG Page View mode; background pagination; word, line, and paragraph counting; bundled MacroMaker, SuperPaint 1.1, and WordFinder thesaurus. **Cons:** Multiple modes and features can be confusing; no integrated macros; no search and replace for formatting; weak typographic control. **Company:** Microsoft Corporation. **Requires:** Mac Plus; 2MB or more required for Quick Switch. **List price:** \$395.



As you probably already know, Microsoft Word is loaded with features, it works well with the big-three desktop publishing programs, and it lets you share files with the IBM version of Word. With other word processors out there that boast bigger toolboxes, and with less daunting competitors that are less expensive and in some cases faster, you might be wondering whether or not to buy Word 4.0.

Well, you won't go wrong if you do. This latest release is more accessible and useful for both novices and pros; it's got impressive table-creation tools, additional formatting powers, a whole menu full of word processing utilities, and at least a dozen other nifty enhancements.

Even though the interface has been streamlined, casual users might still be intimidated. There are four display modes (Galley View, Page View, Print Preview, and Outline View), for instance, plus table and equation editing. It takes a while to figure out what you can and cannot do in the different modes, and how to do it.

And even with all the new features, a few obvious ones are still missing. There's still no integrated macro language (one has been available for more than a year in the IBM version), no search and replace based on formatting, and no additional typographic control—no fractional point sizes, kerning (automatic or manual), or adjustments for hyphenation and justification parameters. Nor will you find integrated drawing or painting tools. (The

copy of SuperPaint combined with Word's Quick Switch feature lets you create and include bitmapped and object-oriented art with only a couple of extra steps.)

The program is extremely sluggish on less powerful machines (SE or below), though it performs fine on a Mac II and is much faster than the previous version for basic word processing tasks—search and replace, automatic numbering, index and table-of-contents generation.

What You See

One of the most obvious changes in this version is the addition of a Page View mode—it resembles normal Galley View mode except that you see pages as they will print, including page numbers, headers, footers, and dotted lines for margins and columns. It's like Word 3's zoomed-in Print Preview mode, except you can edit all the page elements freely.

Print Preview mode is still there, but without the magnifying glass for zooming

in. Instead you click on the Page View button to go from Print Preview to Page View. With background pagination turned on, Word can now update page breaks on the fly, though speed suffers some and the constant screen activity is annoying.

Other interface changes include reorganized menus and dialogs, hot click areas, and the capability to reconfigure menus and ⌘-key combinations. There's a new Utilities menu, where you'll find search and replace, a spelling checker, hyphenation, indexing, word count (characters, words, lines, and paragraphs, at last), calculating, renumbering, and sorting (but still no control over sorting parameters as in the IBM version).

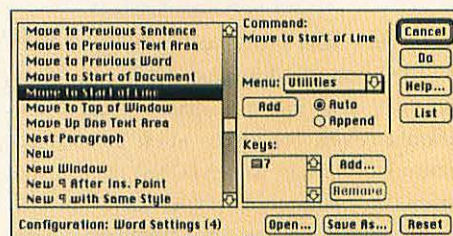
The Format and Document menus are more logical and efficient, and the Paragraph formatting dialog has once again adapted the much better layout from version 1.05. You can change paragraph formatting without mousing around with the ruler. You can call up the Paragraph dialog by double-clicking on the ruler, or the Tabs dialog by double-clicking on the tab area. You can apply a style, or modify one by example, based on the formatting of the current selection, through a drop-down menu in the ruler.

Word 4.0 makes better use of the extended keyboard than any word processing program to date—including all those F-keys up top. You can assign menu commands and most dialog box commands to any keyboard combination you like (you can have multiple keyboard equivalents for an item), and you can even move menu items around between menus. You can load and save all those settings in external files, so different people using the same machine can use their own settings.

The interface for outlining has also improved. Now you can grab outline items and drag them up and down and in and out, and choose whether to display formatted text in outline mode or not.

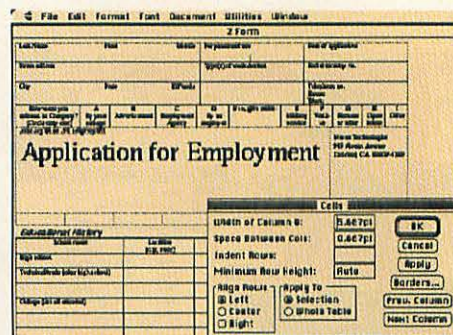
You Got the Look

New formatting controls include a Position dialog box, which lets you specify a position for any paragraph, and improve paragraph border controls. You can set up custom borders for paragraphs with different (continues)



Choose Your Weapon

You can assign your own keyboard combinations to commands in Word 4.0, move menu items from one menu to another, and save the settings in a custom configuration file.



On the Table

The new table feature in Word 4.0 lets you create complex forms, with text that wraps within tabular columns. You can specify column widths numerically, or Word will figure them for you.

Full Page Buffering

Your Assurance of Quality and Performance in Imagesetting

When you see this seal on Varityper® imagesetters, it's your assurance that the equipment you're buying has been engineered with a distinct advantage . . . Full Page Buffering™. This feature, which allows a full page to be processed and printed without interruption, provides the highest output quality and system performance. You get better quality and save time and money over systems which periodically halt printing to process more data only to then resume printing.

Full Page Buffering makes Varityper imagesetters:

#1 in Quality—Continuous imaging eliminates the problems associated with start/stop schemes and provides greater long term reliability.

#1 in Speed—Varityper has the fastest image recording systems. Full Page Buffering allows them to run without interruption. It's just that simple.

#1 in Performance—Offering the broadest line of imagesetters with Adobe's PostScript® interpreter. From the 4300P and the 4200B-P for photomedia, to the VT600W and VT600P for high resolution on plain paper, Varityper is the name to remember for imagesetting quality and performance.

Call now for details.

Toll Free:

1-800-631-8134

In N.J.: 201-887-8000, Ext. 999

Varityper

a Tegra Company

Varityper is a registered trademark of Varityper, Inc.
PostScript is a registered trademark of Adobe Systems, Inc.
Full Page Buffering is a trademark of Varityper, Inc.



Circle 93 on reader service card

ent line sizes for each of the four sides, and you can border multiple paragraphs with or without lines between them.

The Position dialog lets you specify a position for a paragraph—either absolute or relative to the page or column. Other text flows around positioned paragraphs, which is especially useful when you want graphics in a certain place. In Print Preview mode, you can grab positioned paragraphs and move them around; other text reflows around them. The vertical position for a paragraph can be *In line*, making it easy to hang multiline subheads in the margins without resorting to the feature everyone hates and hardly ever uses: side-by-side paragraphs.

The new table feature is an even better answer to that worst-of-all-possible features. You can now insert a table—a distinct entity that is different from normal tabular matter. Text within table columns wraps to the width of the column, a cell can contain multiple paragraphs with all the normal character and paragraph formatting, and the table cell expands downward as you type (unless you tell it not to)—eliminating all that cutting and pasting between columns and rows. The borders that work with paragraphs work just the same with table cells.

Creating a table from scratch is straightforward, and you can easily convert comma- and tab-delimited data (from databases and spreadsheets, for instance) into tables. If you currently have tables that are formatted with fancy tab stops, though, Word 4.0 can't convert them to the new type of table. Say hello to cut and paste again. And you can't convert a new table to a normally formatted table, either (not with multiple-line entries, at least), and other programs can't import the new tables. As with equations, you must either print these tables from within Word or rebuild them in another program.

At least for the time being you'll have to save all Word 4.0 documents in Word 3 format if you want to import them into page-makeup programs.

A host of other small features make Word 4.0 much more usable. Quick Switch lets you paste a graphic or spreadsheet with a warm link so you can update it quickly under MultiFinder. It also remem-

bers where the file containing the graphic or spreadsheet is on your disk, launches the graphics or spreadsheet program, loads the file, and selects the appropriate material. And you can now use Microsoft Mail right from the File menu.

There's a smart quotes option that automatically uses open and close quotation marks rather than typewriter-style quotes, and another option gives you a slanting cursor when you're working with italic text. All the fonts in the System Folder appear on the font menu without your adding them; you can choose from six colors (plus black and white) for text; there are menu items for inserting page breaks, index codes, and table-of-contents codes; and you can display graphics as gray boxes for faster screen painting. Word takes advantage of all available memory, and it remembers the size and position of the window for every document, so they open up the way they were the last time you worked with them.

Compared to programs like FullWrite and Nisus, which include complete drawing tools, thesauruses, and macros, Word 4.0 may seem to pale. It comes with three free add-ons, though (MacroMaker, SuperPaint, and WordFinder), that go a long way toward filling the gaps. While MacroMaker is a second-rate macro utility, SuperPaint is a top-notch paint-and-draw program, even in version 1.1, which comes with Word. Upgrading to SuperPaint 2.0 costs only \$50. WordFinder, a thesaurus in a DA, is all you could ask for, though it's annoying that it only works with Word unless you resort to some undocumented ResEdit tricks.

Word is at its best within a suite of programs for different purposes—graphics, number-crunching, desktop publishing, and various utilities. If you have to buy just one program and want the whole ball of wax, you might look into the more feature-laden competitors. Or if your word processing needs are more modest, check out simpler programs like Microsoft Write or Works, MacWrite II, or WriteNow. But remember that Word still qualifies as the most useful general-purpose word processor within the Macintosh environment.

—Steve Roth

See Where to Buy for contact information.



MACLITE

Portable Computer with Mac File-Transfer

Pros: Light, easy to use, portable; easy file transfer to and from the Mac; HyperCard information can be downloaded to Z88. **Cons:** Keys, autorepeat settings too sensitive; no way to anchor serial cable to Z88; small characters on display. **Company:** Cambridge North America. **List price:** \$899.



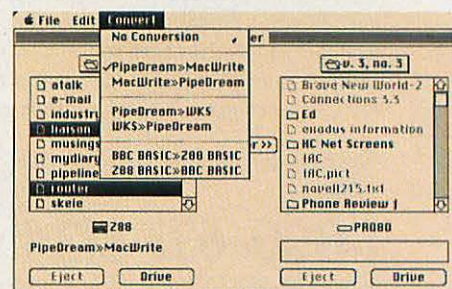
Although certainly not the long-awaited Mac portable, MacLite is a reasonable solution for taking some sort of portable on the road and still being able to transfer files from it to the Mac. This Sinclair Z88 battery-powered computer comes with 32K of RAM and an 8-line display. You also get an additional 128K RAM, a serial cable, file-transfer software, and a vinyl carrying case. For the price, it's hard to beat.

Look-and-Feel

But don't go reaching for your mouse just yet. The MacLite—with its small, 8-line character-oriented display—is most definitely not a Mac-like portable. And its OZ operating system, although easier to use than MS-DOS, doesn't have the intuitive display of the Mac's Finder.

The MacLite keyboard has three keys that simplify the use of its operating system: Index, Menu, and Help. The Index key calls up a display that shows the applications available and which applica-

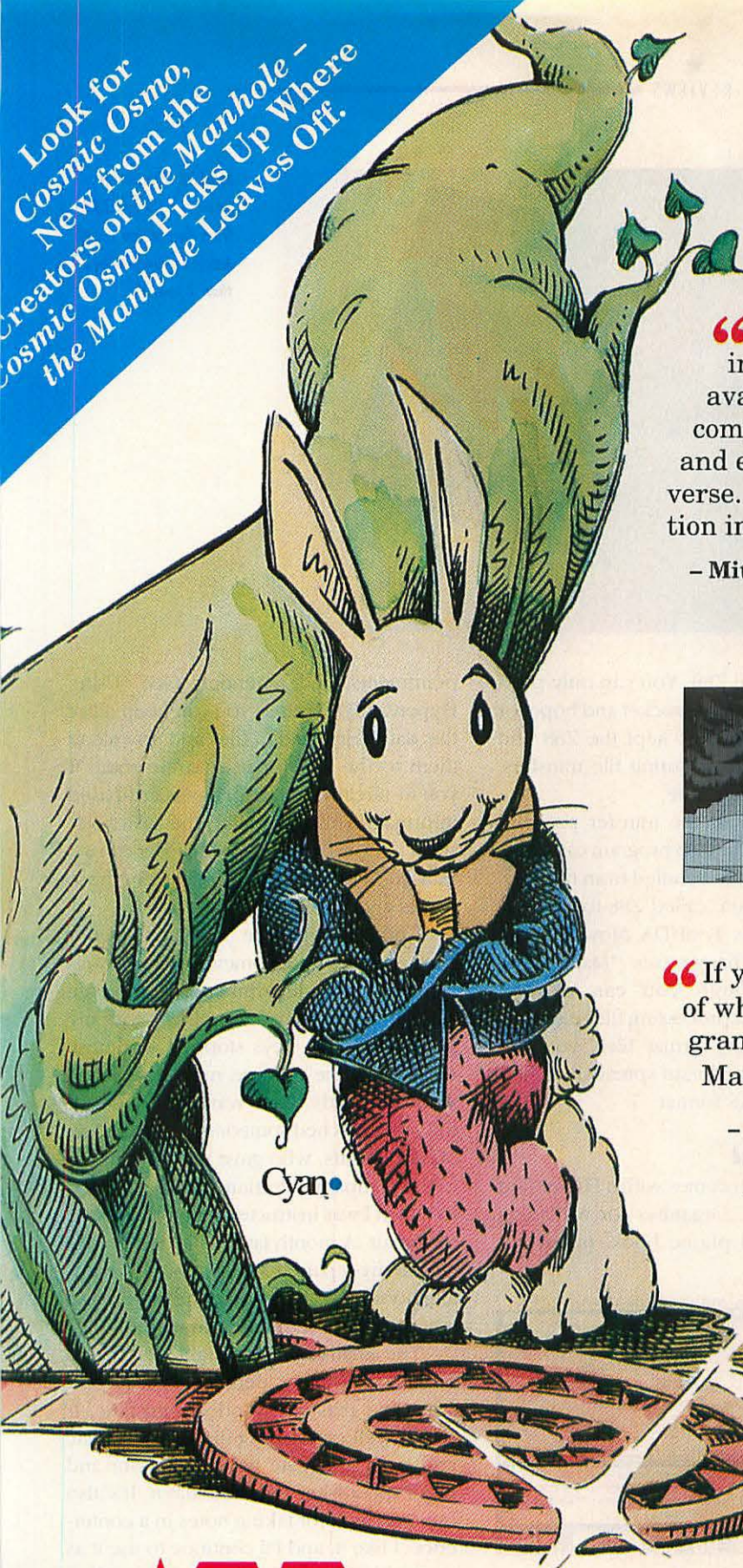
(continues)



Making the Trade

Once you've selected the form of the file conversion from the pull-down menu, you simply select the appropriate files on the MacLite for transfer (Shift-click to select more than one file) and click on the Transfer button.

Look for
Cosmic Osmo,
New from the
Creators of the Manhole -
Cosmic Osmo Picks Up Where
the Manhole Leaves Off.

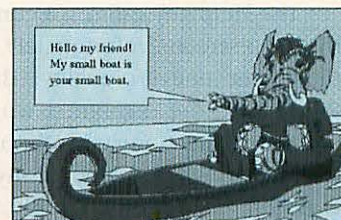


Industry Figures Tell the Story . . .

the Manhole Is a Breakthrough

“The first full-fledged interactive storybook available on a personal computer . . . a charming and engaging fantasy universe. . . proof that innovation in personal computing is alive and well.”

– Mitch Kapor, founder of Lotus Development
and chairman, ON TECHNOLOGY



“A provocative, idea-stimulating glimpse of a whole new genre . . .”

– Stewart Alsop,
editor, *P.C. Letter*

“If you want a glimpse of what a computer program can be . . . see the Manhole.”

– Jerry Borrell,
editor-in-chief,
Macworld



Get **the Manhole** and see for yourself. 🐰

ACTIVISION

The Software Publishers Association honored **the Manhole** as the Best New Use of a Computer in 1988.



Also
available
on
CD-ROM

See your local retailer or call 1-800-227-6900 to order.

Circle 444 on reader service card

©1989 Activision, *the Manhole* ©1988 Cyan. MS-DOS version ©1989 Activision. *the Manhole* is a trademark of Activision. Distributed by MEDIAGENIC.

tions and files are currently active. You use the Menu key to scroll through the menu of command categories, such as File and Edit, which appears on the left-hand side of an application's display.

The Help key calls up a context-sensitive help screen. Unfortunately, OZ's help files offer uneven quality; the file for Pipedream, the combined word processor/spreadsheet, includes the most information, and there's little, if any, information for the 12 other applications that come with MacLite. A small metal plate positioned just below the MacLite display shows frequently used word processing commands.

Even though the keyboard is a comfortable size, it takes getting used to. Its rubberized coating is fine for protection, but has an odd feel and tends to attract dirt and dust. And although the coating helps quiet the keys, it also curtails much in the way of positive feedback. In fact, turning off the keyboard's autorepeat feature is the only way to prevent unwanted repetitions of a character for each keystroke.

If you plan to use Pipedream for setting up tables or any formatted documents, you may like the option of turning on a tiny page display, which appears to the right of your document, uses one pixel for each character you type, and shows each page's format at a glance. It's a nice feature, but full pages tend to slow down the display.

The Z88 automatically turns itself off after a user-selected time period and remembers what program and file you were using; that way, when you turn the Z88 on again, you come right back to where you were originally. Be sure to carry around some extra batteries, because you'll find that the batteries never seem to last as long as you would like. An AC adapter is available, at an extra cost, and is helpful when you're near an electrical socket.

The Mac in MacLite

MacLite's file-transfer package consists of an EEPROM for the Z88, a serial cable, and software for the Mac. You need to pay close attention when using the serial cable, however, since the Z88 case has no holes for the two screws that attach the DIN9

MARK JOHANN



MacLite, the battery-powered Sinclair Z88 from Cambridge North America, weighs less than 2 pounds.

connector to the Z88. You can only push the connector into the socket and hope for the best. As long as I kept the Z88 and the cable stationary during file transfers, everything worked fine.

Once you start the transfer program (called Link) in the Z88 program cartridge, all file transfers are handled from the Mac. The Mac program, called Z88-to-Mac, resembles Apple's Font/DA Mover or the Apple File Exchange (see "Making the Trade"). Although you can convert Pipedream word processing files into text-only or MacWrite-format files, you can only convert Pipedream spreadsheet files into Lotus's WKS format.

Portable HyperCard

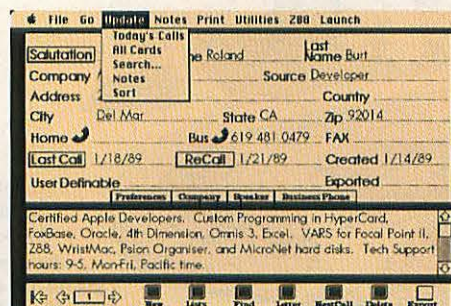
The MacLite also comes with a HyperCard stack called HC Organiser for managing an address and phone book, notes, ap-

pointments, and reminders (see "Using HyperCard"). With it, you can keep all of this data organized in files and download them to the Z88 for use on the road. If you're already using a HyperCard-based information manager like the Datebook stack or Focal Point, HC Organiser can act as a go-between for information in those stacks and the Z88.

Unfortunately, the MacLite's usefulness is offset by a somewhat slow-to-respond support department at Cambridge North America. I had a problem with my MacLite (certain keys stopped working), so I called the toll-free numbers on the warranty cards. One was disconnected, the other reached someone in Cambridge, Massachusetts, who gave me the address of the company's Portland, Maine, facility, to which I was instructed to return my unit for repair. A month later I still had not received my repaired MacLite, but I eventually hooked up with someone in Portland who was able to track it down.

The small and lightweight (less than 2 pounds) MacLite is definitely a very portable and reasonably priced machine. It works well exchanging files with the Mac and is an adequate word processor and small spreadsheet-like calculator. It's also quiet enough for taking notes in a conference. I like it, and I'll continue to use it as a portable word processor and note-taker. But if you're looking for something with a mouse and a Mac interface, you'll have to look elsewhere.—Dave Kosiur

See Where to Buy or circle 816 on reader service card.

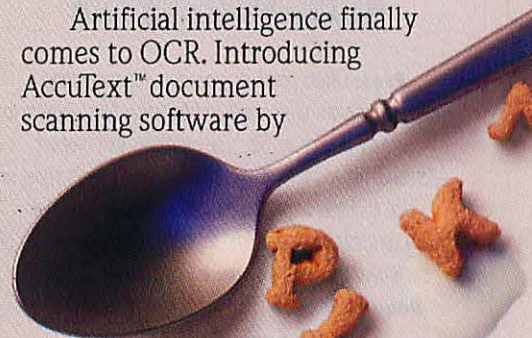


Using HyperCard

This screen shot illustrates a phone card in the HC Organiser stack. Recall reminders can be set for transferring to the MacLite or can be updated with information from the MacLite.

XEROX

Artificial intelligence finally comes to OCR. Introducing AccuText™ document scanning software by



Datacopy. Unlike other OCR products, AccuText is one of the first true applications of artificial intelligence.

Scan thousands of different typesets and AccuText will learn them quickly and recognize them forever.

Scan a poor quality photocopy or facsimile and AccuText will decipher it.

And when you show AccuText a document, it will reconstruct its format automatically.

What's more, AccuText is compatible with Datacopy's full line of scanners, Hewlett-Packard's ScanJet™ and ScanJet Plus™, the Apple Scanner, and others.

Let us tell you about AccuText from A-Z and where to find your nearest dealer. You'll see we're not just feeding you a line.

Call us at (800) 821-2898.



Datacopy
Xerox Imaging Systems, Inc.

NO MATTER
WHAT
YOU FEED
YOUR SCANNER,
ACCUTEXT
CAN
READ IT.

Copyright 1989 by Xerox Imaging Systems, Inc. Datacopy, AccuText is a trademark of Xerox Imaging Systems, Inc. All other product names are trademarks or registered trademarks of their respective holders.

Circle 376 on reader service card

★
DOCUCOMP 1.0

Document-Comparison Utility

Pros: Offers painless procedure for comparing revisions of word processing and text-only files; reports to screen, printer, or file; free upgrades will support additional file formats. **Cons:** Doesn't track font, style, or size changes or preserve them on screen or in the saved comparison document; supports a limited number of document formats. **Company:** Advanced Software.

Requires: Mac 512KE; hard disk recommended.

List price: \$159.95.



Whether you write professionally or simply make frequent use of a word processing or text-editing program, eyeballing sheaves of paper to identify the differences between document versions can be a real nightmare—particularly if you're in a rush but still need to be accurate. With the release of DocuComp, a document-comparison utility, the right tool for the job is at hand.

Automatic Comparisons

DocuComp reads files in their native format and allows you to compare any two documents, showing every text insertion, deletion, replacement, or movement. Version 1.0 works with Microsoft Word 3 and 4, WordPerfect 1, Nisus, and ASCII text files. Different file types can be compared to each other (text-only versus Word, for example) as long as both formats are supported. Later releases will handle additional formats—including MacWrite, WriteNow, and FullWrite—and will be available as free upgrades. Right now, copies of Microsoft Word 4.0 include a coupon entitling the bearer to a Word-specific version of DocuComp for \$10.

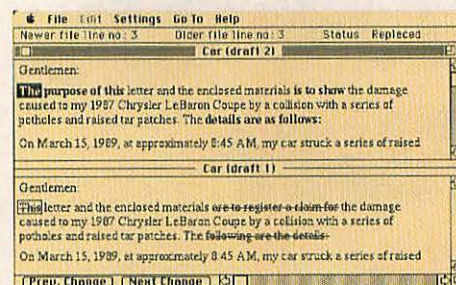
The program identifies changes in both wording and punctuation. When comparing files, however, DocuComp ignores differences in font, style, and size; graphics; page formatting; and blank spaces and lines. It can compare computer program listings and database files, treating each line as a separate paragraph. A Display Settings dialog box lets you pick the combination of font styles (bold, italic,

strikeout, and so on) that will represent the different types of changes after the comparison has been made.

Since double-clicking on a document icon from the Finder would naturally bring you into the program that was used to create the document, Advanced Software includes a tiny utility called DocuComp Launcher that starts DocuComp for you. Since it's small (approximately 2K), you are encouraged to place it in every word processing folder from which you might like to start DocuComp.

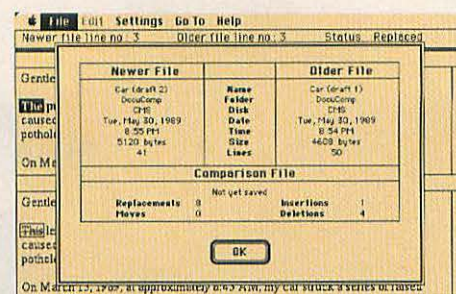
Using DocuComp

To compare documents, all you have to do is select the new and old versions, and click on the Compare button. Since few word processing programs automatically make backup files, you must get in the habit of saving multiple versions if you want to use DocuComp. When the program finishes processing the two files, it displays the result on a split screen (see "The DocuComp Comparison Window").



The DocuComp Comparison Window

DocuComp uses a split screen to display the two document versions simultaneously. Cursor movement in one pane is automatically matched in the other. Buttons let you quickly jump from one difference to the next.



Summary of Differences

Selecting Document Info from the File menu brings up this dialog box, which summarizes differences between the documents.

The upper pane contains the newer document, and the lower pane displays the older document. You can activate either window by clicking in it. Although you'll mostly go through the files by moving from change to change using the Previous Change and Next Change buttons, you can also use the scroll bars and a variety of keyboard commands to move through the documents.

Report Options

Although examining the differences on screen is useful, for many users DocuComp's greatest utility will be its report-creation capabilities. If you need a quick summary of the differences between two drafts—including, for example, the file names, dates, sizes, and number of changes—a simple menu command can pop it up (see "Summary of Differences").

If you want a permanent record, you can create a composite document that's a combination of both files. This can be printed from DocuComp or saved to disk for viewing or printing in a word processor. In addition to the text that was unchanged in the two versions, all insertions, deletions, and moved text blocks will be shown. Lines that contain changes can be marked by revision bars that appear to the left of each affected line. You can also specify the format for line and page numbering, line spacing, and the way that deletions are shown. An elaborate comparison summary is also available that provides the details of every change (page, line number, type of change, and a few words that identify the phrases involved).

A Good Start

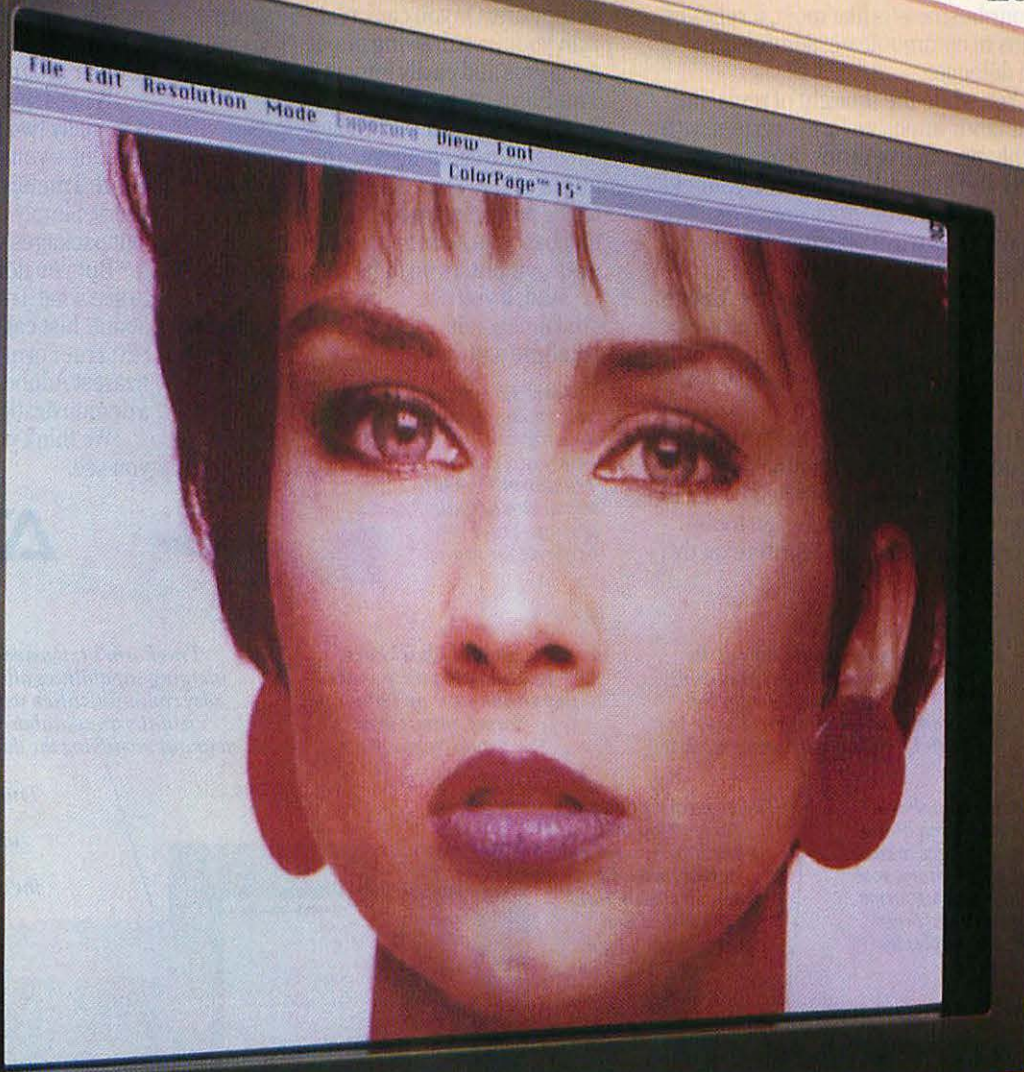
DocuComp's only limitations are the small number of file formats supported in version 1.0 and the program's inability to consider text-formatting changes as differences. In any event, considering what the program can do now, most users won't find these to be significant drawbacks.

For professionals who work with words, the usefulness of a tool like DocuComp is obvious. If you must track multiple versions of a document and must be able to see the differences, you need DocuComp.—Steven Schwartz

See Where to Buy or circle 765 on reader service card.

Introducing ColorPage™

- Perfectly flat screen
- Actual size 72 dpi
- Full page view
- Low cost



More Color for Your Money.

More Color

ColorPage™, E-Machines' newest color display, gives you more room. A full page of room. A third more than the Apple 13". At exactly 72 dpi, the same size as your printed page or presentation slide.

More Value

E-Machines' ColorPage gives you sharp, colorful, actual size full pages. All at a price/performance that beats the Apple 13".

More Features

Only Color Page has a perfectly flat, flicker-free screen, 256 vivid colors, tilt/swivel base and unique software to enhance viewing. And, we back our displays with MoreCare™ for the best in quality, warranty and support.

More Innovation

Any way you look at it, E-Machines innovative display systems give you more color for your money.

Find out where to buy an E-Machines ColorPage. Call us today at 503-646-6699. Or, write to us at 9305 SW Gemini Drive, Beaverton, OR 97005.



ColorPage™ - Full
page 768 X 576.
Apple 13" - 3/4 page
640 X 480.

Circle 303 on reader service card



E-MACHINES
Power to See Your Best

© 1989 E-Machines. ColorPage and E-Machines are trademarks of E-Machines, Inc.

Our new program can take any form you like.

If your business is like most, it relies on forms to communicate, administrate and delegate.

Yet, while the thought of replacing your labor-intensive forms system with a highly-productive forms program sounds good, the thought of replacing your existing forms probably does not.

Which is why you should think about this.

Introducing TrueForm™, the Macintosh® program that automates all of your existing forms. With TrueForm software, you don't have to change the way you work, re-train personnel or replace your current stock of pre-printed forms.

Because, unlike other forms programs, you aren't constrained by the limitations of a few built-in design tools. Instead, you can scan-in forms exactly

as they are. Or you can create new forms with your own drawing or page layout programs and easily import them into the TrueForm program.

TrueForm offers complete spreadsheet features, along with the most powerful set of data-sharing capabilities of any forms program. So you can link forms to databases, accounting applications and even computers on different platforms.

And, if you use 4th Dimension® database software,

For just \$20 (refundable when you buy the program) we'll rush you a copy of TrueForm Try-Out, so you can actually see how TrueForm performs for you.

our special interface enables you to print onto master forms without leaving that popular program.

What's more, because TrueForm is actually two programs—Set-Up and Fill-Out—you won't have to buy the entire Trueform package when you add users. Simply purchase additional Fill-Out packages whenever you need them.

But you don't have to buy either one to see what TrueForm software is all about. Just call (800) 344-8335 for our \$20 TrueForm Try-Out or visit your nearest Adobe Authorized Dealer for a demonstration.

We think you're going to like what you see.

ADOBE



Along with one copy of the Set-Up and Fill-Out programs, you'll get templates for ten common business forms and the 4th Dimension printing module.

The unique QuickForm™ tool allows users to make important notes on individual forms, just as they would by hand.

TrueForm's extensive merging capabilities allow easy communication with virtually any database without modifying the data.

Because TrueForm compresses each of your scanned images to save valuable memory, you can use existing forms regardless of their size or complexity.

The program's powerful formatting tools make it easy to set-up forms and add on-screen instructions to guide users through each field.

TrueForm supports all PostScript®, as well as ImageWriter® and LaserWriter® printers; it prints entire forms or just the contents on pre-printed forms.



TrueForm supports odd-sized forms, multiple-part forms, mailing labels and forms of unlimited pages.

TrueForm turns any Macintosh—from a Mac Plus to a Mac IIcx—into your own personal forms factory.

With TrueForm you can easily import forms from any drawing or page layout program stored in TIFF, EPSF, PICT or MacPaint® formats.



POSTSCRIPT
Software From Adobe

Look for this symbol on computers, printers and other products that include PostScript software from Adobe Systems. It's your guarantee of quality and compatibility.

Adobe, PostScript, the Adobe logo and the PostScript logo are registered trademarks and TrueForm and QuickForm are trademarks of Adobe Systems Incorporated. Macintosh, ImageWriter and LaserWriter are registered trademarks of Apple Computer, Inc. MacPaint is a registered trademark of Claris Corporation. 4th Dimension is a registered trademark of AGIUS, Inc. and ACI. © 1989 Adobe Systems Incorporated. All rights reserved.

VIRTUAL 1.05

Virtual-Memory System for Macintosh

Pros: Less expensive than real memory; easy to install. **Cons:** Slower than RAM; uses 8MB of hard disk space. **Company:** Connectix Corporation. **Requires:** Mac with 68020 microprocessor and PMMU, or Mac with 68030; hard disk. 2MB RAM recommended. **List price:** with 68851 PMMU chip \$695; \$295.



Given today's crop of memory-hungry applications, it's no wonder that the Macintosh has outgrown its 1MB standard RAM allocation. Even with a second megabyte, running more than two programs under Multi-Finder is usually impossible. One answer is to buy more memory, a costly proposition even with today's falling prices. A cheaper solution, known as *virtual memory*, is slated to appear with System 7.0 sometime next year. Until then, there's Connectix Corporation's virtual memory system, Virtual.

Thanks for the Memory

Virtual memory has been commonplace for years on mainframes and minicomputers. Virtual brings that capability to the Mac, fooling it into using a hard disk instead of RAM. Because mechanical drives are much slower than silicon chips, Virtual minimizes the number of disk accesses by exchanging "pages" of information between memory and disk only when it has to. To further reduce disk activity, Virtual swaps out the least recently used pages, ensuring that active portions of code or data remain in real memory.

To run on a Mac II, Virtual requires a specialized chip called a Paged Memory Management Unit, or PMMU (the Macintosh IIx, IICx, and 030 SE already have one built in). Connectix recommends that you have the chip (around \$400) installed by a certified technician. If the warnings about bent pins and cracked system boards don't intimidate you, you can do it yourself—the procedure takes only a few minutes and is well illustrated in the manual.

Part two of the installation process is much easier: just drop the 10K Virtual INIT file into the System Folder and restart the Mac. If all's well, the computer will take a bit longer than usual to reboot, and the Virtual start-up icon will pop up at the bottom of the screen.

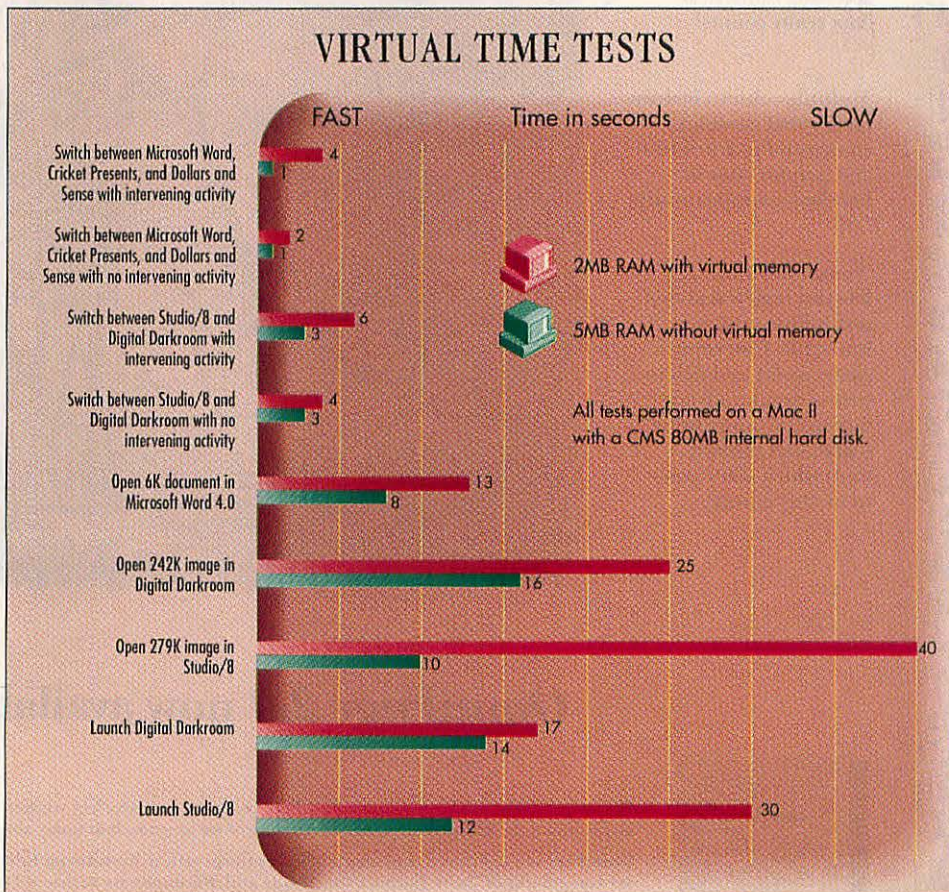
The first time it loads, Virtual grabs an 8MB chunk of contiguous disk space. (If Virtual can't find an unbroken block, you will have to defragment the disk using a utility like ALSoft's DiskExpress.) Because of a limitation imposed by the Mac's current operating system, Virtual can't be configured for more than 8MB.

Faster than a Speeding Hard Disk

How well Virtual works depends on the speed of your hard disk, the amount of RAM you have, and the applications you use. As you'd expect, the faster the hard disk and the more real memory, the better the performance. Connectix suggests that

you start with at least 2MB of RAM. For my tests, I used a 2MB Mac II equipped with a CMS 80MB internal hard disk (see "Virtual Time Tests"). With Virtual enabled, I was able to run two heavy-duty graphics programs that need more than 2MB (Digital Darkroom and Studio/8) under Multi-Finder. Next, I installed 5MB of RAM and ran the same applications without Virtual. Finally, I repeated the tests with three less-demanding applications (Microsoft Word 4.0, Dollars and Sense 4.1c, and Cricket Presents 2.0).

The results with less-demanding software, like word processors, were more impressive, with a lag of under a second between programs. Rarely, Virtual went into a thrashing fit where it accessed the disk continuously for over a minute (the record was almost four minutes). According to the manual, there's no predicting what will set off one of those episodes. (continues)



Launching applications and opening documents on a 2MB Mac II using Virtual suffered in comparison with the same activities on a 5MB Mac II without Virtual. Application-switching times for the two machines were almost identical, however.

So It Is Written... So It Shall Be.

Means that *OmniPage* can read virtually any font, in sizes that range from 8 pt. to 72 pt.

This unique landscape feature means that spreadsheets and financial documents are only a scan away. A great addition to your royal granary if storing and accessing numerical data really counts!

Multiple column feature means that complex, compound pages of text and graphics can be handled—automatically.

Transitional Editor™ lets you review scanned text before exporting it to a file. Cut, copy, paste, insert and delete text—or take advantage of the powerful search and replace tools which allow you to modify a page.

Reads and outputs underlines, bold faces and italics.

Supports the most popular word processing programs for the Macintosh, including *Microsoft Word* and *MacWrite*.

Supports 11 of your favorite Indo-European languages, including French, German and Spanish.

WYIScan™ interface takes full advantage of Macintosh's incredible ease-of-use.

OmniPage 2.0 has even more features than ever before—this translates into the most comprehensive page recognition software available—anywhere—for any dynasty—at any price.

The bottom line in page recognition software—eliminating excessive key strokes* for all time.

OmniPage 2.0 now available!



*Egyptian scribes had a real time of it when it came to excessive key strokes. Each letter, or hieroglyph, had to be individually etched into stone. And we complain today about writer's cramp?

OmniPage is a registered trademark of Caere Corporation. *Transitional Editor* and *WYIScan* are trademarks of Caere Corporation. *Apple* and *Macintosh* are registered trademarks of Apple Computer, Inc. *Microsoft Word* is a trademark of Microsoft Corporation. *MacWrite* is a licensed trademark of Claris Corporation. Egyptian bust of Ramses II courtesy of the Rosierucian Society of San Jose, California. ©Copyright 1989 Caere Corporation. All rights reserved.

CAERE

Caere Corporation
100 Cooper Court
Los Gatos, CA 95030
1-800-535-SCAN

Thankfully, it only occurred three or four times during three months of testing.

Virtual might degrade the performance of some software, especially sound and animation programs. And there's no assurance that your unique combination of applications, desk accessories, and INITs will run at all. (If you suspect that Virtual is at fault, you can temporarily disable it by holding down the esc key, or an equivalent key combo, at start-up.) Virtual might also be incompatible with some NuBus cards that access memory directly. If possible, I suggest that you try your setup before buying, or ask your dealer for a 30-day money-back guarantee.

Virtual is a bargain if your Mac already has a PMMU installed, or if you have one of the newer 68030 machines. For \$295, you can upgrade to 8MB for about \$40 per megabyte, a price that won't be matched soon. If you have an 020 Mac with 1MB, you'll have to add the cost of a second megabyte (currently well under \$100 for a 256K chip) to Virtual's \$695 price tag. But buying Virtual also nets you a PMMU, which you'll need to run Apple's virtual memory operating system when it appears. Virtual isn't perfect, but it certainly works well enough to be a viable solution until Apple comes through.

—Franklin Tessler

See Where to Buy or circle 893 on reader service card.



SUPER 3D 2.0

Three-Dimensional Modeling Program

Pros: Intuitive interface; effective animation options. **Cons:** Slow redrawing without a math coprocessor. **Company:** Silicon Beach Software. **Requires:** Mac Plus; hard disk highly recommended. **List price:** \$495.



Super 3D 2.0 is a major, feature-laden upgrade to Silicon Beach Software's three-dimensional modeling program. Like its predecessor, Version 2.0 has a superb user interface: shapes are created in a familiar two-dimensional drawing environment, then are revolved, extruded, or *swept* (which combines revolving, extruding,



Three-Dimensional Space
Super 3D version 2.0 adds color to its hierarchical, three-dimensional models.

and repositioning) into three dimensions.

The new version retains intuitive spin wheels for rotating models and changing viewing angles. The program still allows you to choose the position and intensity of up to four light sources and render as models wire frames or solids. The three algorithms for rendering solids offer varying trade-offs between speed and accuracy. You can still view your model with a "camera" that you locate anywhere in space and zoom, pan, or dolly for different views.

Super 3D still supports creation of hierarchical models from collections of stock or custom 3-D objects.

So What's New?

The most notable change offered by version 2.0 is support for color and gray scales when running on Macs with color support. Any element can be assigned one of 16,000 colors or 64 shades of gray. As the object moves through light and shadow, Super 3D will shade it using available shades or, if necessary, dithering.

My biggest complaint about version 1.0 was lack of speed. Silicon Beach incorporated its own math routines into version 1.0 to improve performance, but that meant that the program was unable to take advantage of the math coprocessor in Mac IIs and SE/30s. Version 2.0 fully supports the coprocessor, and the performance improvement is noteworthy. Complex models still take a while to redraw, but working with average models in wire-frame mode is quick enough. Silicon Beach also includes a special version of the program, Super 3D 2.0 bw, for

Macs without color or math coprocessors.

Another gripe I had with Super 3D was the lack of any kind of scaling or dimensioning. Version 2.0, however, adds a scaling feature designed to silence critics like me once and for all: one inch, centimeter, or pixel on the screen can be scaled to represent any number of inches, feet, yards, miles, nautical miles, millimeters, centimeters, meters, kilometers, angstroms, light years, parsecs, or pixels. Of course it's all relative, so the actual units you choose don't affect the drawing, but it is somehow comforting to know they're there.

You're the Director

One of the program's most entertaining features is its ability to create animations. Super 3D will record a series of frames, each showing objects rotated or moved slightly from the previous screen, and then play them back at high speed to show a movie of your model in motion. As with version 1.0, you can create an animation by painstakingly hand-positioning each object in each frame; by allowing the program to automatically perform simple, repetitive transformations on objects; or by importing animation data generated by another program. Version 2.0, however, adds a powerful animation feature called *tweening*, which really makes creating animations a snap.

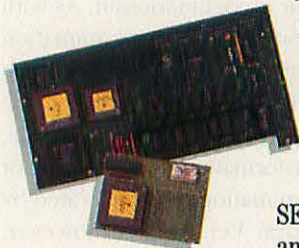
To use *tweening*, you record a sequence of key frames. Super 3D then automatically creates a number of frames between each of these key frames, positioning each object at the appropriate intermediate location and rotation to simulate movement. *Tweening* can't think for you—it will only move objects in a straight line at a constant velocity—but it eliminates most of the drudgery in creating long, complex animations.

Another feature of Super 3D 2.0 that makes creating animations easy is its ability to attach the camera view to an object. The manual gives an example in which the camera is attached to a camera-shaped object. By opening two views of the model, one looking through the camera and another looking down on the entire scene from above, you can act as the director of your movie, positioning the
(continues)

Turn Your Macintosh® Into A Speed Machine

With A MaraThon® Accelerator From Dove. Step up to a new dimension of Mac II performance with Dove's new MaraThon Racer™, our easy-to-handle cache card that gives you accelerator-like performance. Plus the Racer has a sticker price that will have you speeding to your nearest dealer. Just plug in the Racer and drive through your favorite drawing, spreadsheet or word processing applications. For price and performance, Racer is a lap ahead of the competition.

Racer is the latest addition to Dove's MaraThon family of cost-effective accelerator solutions for the Mac II. For maximum processing speed and ultimate system flexibility, Dove offers a variety of CPU based accelerators for the Macintosh SE, SE/30, Macintosh II and IIfx. And they all include the quality, reliability and value you've come to expect from Dove products. We guarantee it!



MaraThon accelerators increase the productivity of your Macintosh SE, SE/30, Macintosh II and Mac IIfx.

Test Drive Any MaraThon Accelerator. RISK-FREE!

Now you can get into the driver's seat of your own MaraThon-enhanced Macintosh for a full 30 days with NO RISK. Just buy one of our accelerators, including the Racer, from your favorite dealer and use it for thirty days. In the unlikely event

that you're not completely satisfied for ANY reason, just return the product to Dove in good working order. We'll refund your money. It's that easy.



Make Tracks To Your Favorite Dealer Today or call Dove toll free 1-800-622-7627 for additional information.



MaraThon®

workstation performance products from



Dove Computer Corporation
1200 N. 23rd Street
Wilmington, NC
28405

MaraThon is a registered trademark of Dove Computer Corporation.
Macintosh is a registered trademark of Apple Computer, Inc.

Circle 173 on reader service card

camera and other objects from your bird's-eye vantage point, then recording the key frames as the camera sees them. Imagine an animation sequence where the camera walks through your model, exploring it inside and out.

Nice Little Touches

A number of elegant improvements have been made to the user interface. For example, when you rotate a model using the spin wheels, the program superimposes a set of three-dimensional axis lines over the model to give a good visual indication of the amount of rotation you're applying. Silicon Beach has also included a HyperCard stack that provides a brief overview of some of Super 3D's features. Super 3D now imports and exports in a variety of formats, including the emerging PICS standard format for animations. Recorded animations can be played by the Projector program, which is being distributed without licensing fees.

The already excellent manual has been expanded and improved. That's important; unlike 2-D drawing programs, 3-D programs require a level of spatial awareness that you can't readily pick up just by playing with objects on the screen. The manual does a great job of guiding the user through that discovery process. Unfortunately, though, Super 3D has no online help.

Super 3D is still not perfect. I found the Undo command to be unpredictable. Simple mistakes like rotating the camera away from the model or accidentally painting the background all black wouldn't undo; the last drawing operation, often not visible, was undone instead. Redrawing was still slower than I'd like, even on a Mac II. And some of the checkboxes and radio buttons still require you to click directly on the button, instead of anywhere on the title as most Mac programs allow.

Except for the slow redraw, which can't be increased much without improvements in the hardware, these complaints are mere quibbles. Super 3D 2.0 is a significant and worthwhile enhancement of an already excellent 3-D modeling environment.—Ron Risley

See Where to Buy or circle 877 on reader service card.

MACFONTWARE

Bitmapped Fonts

Pros: High-quality fonts; can be shared among QuickDraw and PostScript printers. **Cons:** Some PostScript faces are a bit dark and dense at 300 dpi.

Company: Bitstream. **Requires:** Mac Plus; hard disk. **List price:** \$169 per family.



Outlines are outlines and bitmaps are bitmaps, and ne'er the twain shall meet—that is, unless you're talking about Bitstream's unique approach to Macintosh typography. MacFontware combines PostScript outline fonts—like those printed by the LaserWriter IINT—and high-quality bitmapped fonts—like those printed by the LaserWriter IISC and other QuickDraw printers—in the same package.

With MacFontware, you can print a document on a QuickDraw printer and rest assured that characteristics such as character spacing, word spacing, and line width will be the same when the document is printed on a PostScript device. You might have a PostScript printer at the office, for example, and want to print proofs of a presentation on an ImageWriter while working at home. Or perhaps you need to send a report by modem to a branch office that has a different type of printer. Or maybe you plan to start out with a QuickDraw printer like the LaserWriter IISC and later upgrade it to use PostScript; with MacFontware you won't have to buy a new set of fonts. MacFontware not only bridges the printer gap, but the computer gap as well—Mac documents match IBM PC documents that are printed with Bitstream's Fontware.

One Face, Two Formats

The PostScript faces work like those you purchase from Adobe or other typeface companies: you install a set of screen fonts with Apple's Font/DA Mover, drag the appropriate printer font icons into the System Folder, and you're ready to print. If you want, you can use the LaserWriter Font Utility included in each package to manually download fonts to a laser print-

er, a printer's hard disk, or a Linotronic imagesetter's hard disk. A set of printer fonts for PostScript clones is also provided, as well as font metrics files for those typesetting applications that need them.

Installing the QuickDraw fonts (also known as screen fonts) is easy; simply place them in the System file with the Font/DA Mover or use a font/DA extender like Suitcase II or MasterJuggler. Although the installation procedure itself is easy, figuring out which sizes to install may intimidate you at first. A typical MacFontware package contains the following screen-font point sizes: 9, 10, 12, 14, 18, 24, 25, 27, 30, 35, 36, 40, 42, 45, 48, 54, 56, 60, 72, and 96. You won't need them all; which sizes you install depends on which QuickDraw printer you have. QuickDraw printers output bitmapped fonts like the ones displayed on the screen, but improve their appearance by scaling a larger version of a font to produce a given point size. Different printers have different screen-to-printer font-scaling ratios. The ImageWriter, for example, has a 1:2 scaling ratio—for best results it needs a screen font twice the size you want to print; if you're printing

(continues)

Charter

A fine type possesses a simple grandeur

Baskerville

A fine type possesses a simple grandeur

Futura Medium

A fine type possesses a simple grandeur

ITC Garamond Book

A fine type possesses a simple grandeur

Brush Script

A fine type possesses a simple grandeur

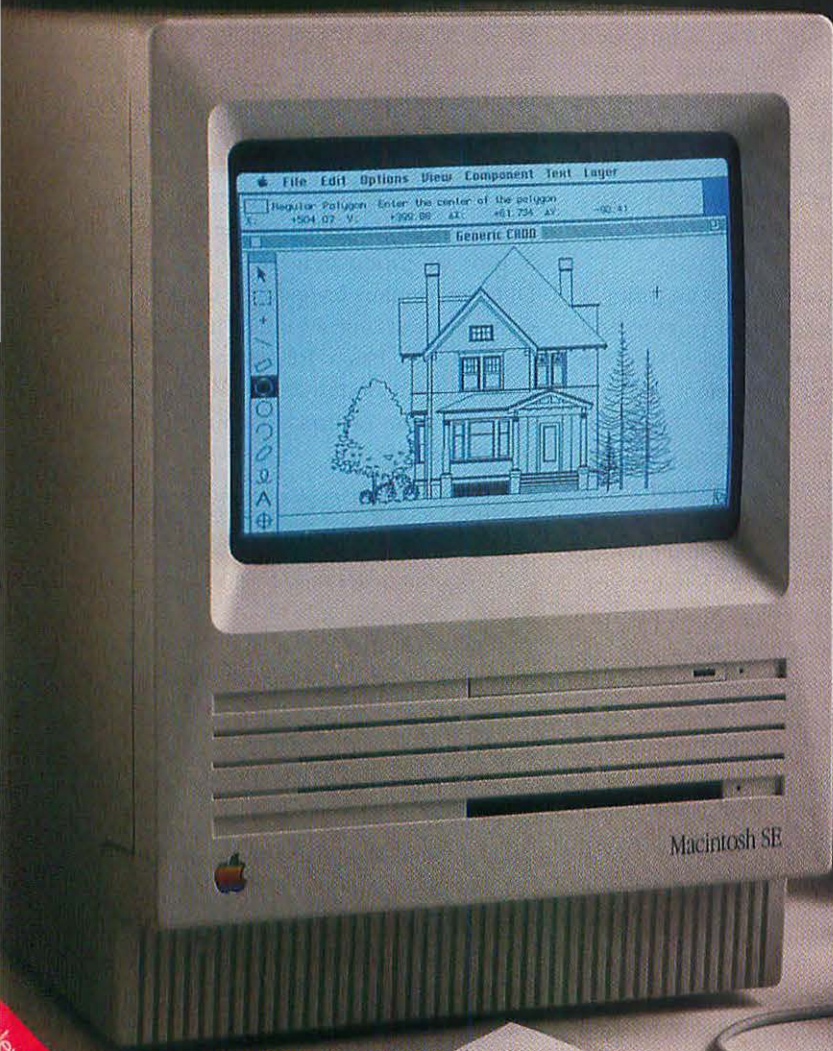
Hobo

A fine type possesses a simple grandeur

Faces with Character

Bitstream's first Mac typefaces range from light-hearted display faces, such as Brush Script and Hobo, to utilitarian old-timers like Baskerville and Garamond.

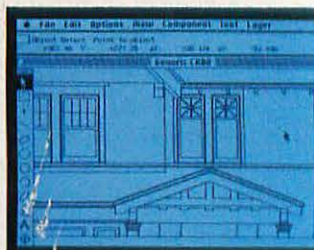
REAL CADD FOR YOUR MAC... JUST \$149.95!



New version includes snaps, additional drawing tools, DOS/Mac translator, and more!
Call 1-800-228-3601 for details!

Affordable CADD. And it's only the beginning.

The CADD stands for Computer Aided Design and Drafting. With a suggested retail price of just \$149.95, Generic CADD Level 1 makes the power of real CADD affordable. And it's just part of a family of Generic CADD products that will make you more productive than ever before.



Standard Mac interface for ease of use.

Now you can produce accurate drawings with real world scale on the Mac Plus, Mac SE, or Mac II. You can edit multiple drawings in separate windows and cut and paste between them. CADD Level 1 is also multifinder compatible.

Symbol Libraries boost productivity.

From office furniture to specialized electronics symbols, our Symbol Libraries save you the time of redrawing repetitive elements every time you need them.

Add the power of real CADD to your Mac.

Move your Macintosh drawings into the real world. Call us at 1-800-228-3601 for your free CADDalog or the name of your Generic dealer. And find out why we say that the only thing generic about us is the price.

1989 Generic Software, Inc. Generic CADD Level 1 is not copy protected and comes with a 60-day money back guarantee. Registered users get free technical support from Generic. Level 1 and Generic CADD are trademarks of Generic Software, Inc. Macintosh is a trademark of Apple Computer, Inc.
11911 North Creek Parkway South, Bothell, WA 98011

Circle 157 on reader service card

Generic
S O F T W A R E

Charter

"A fine type possesses always a simple grandeur that makes it monumental."

— *Frederic W. Goudy*

ITC Garamond Book

"A fine type possesses always a simple grandeur that makes it monumental."

— *Frederic W. Goudy*

QuickDraw Contenders

In addition to PostScript outlines, MacFontware provides high-quality bitmapped fonts such as these printed on the LaserWriter IISC.

10-point text, it scales a 20-point font. The ImageWriter LQ has a 1:3 scaling ratio—you need a 30-point font to print 10-point text. And the LaserWriter IISC has a 1:4 ratio; it scales a 40-point font to print 10-point text. Fortunately, the MacFontware user's guide has a handy chart that shows you which sizes to install for your particular printer.

Since you don't need to install all the screen font sizes, it would be nice if Bitstream had separated the screen fonts into prefab suitcases for various printers. Doing so, however, would add more files and yet another disk to the five or six disks already supplied in each package.

Handsome Faces

Bitstream's initial offering includes a good mix of display and text faces. Two Headlines packages contain four display faces each. The Headlines 1 package features Cooper Black, University Roman, Broadway, and Cloister Black, a black-letter or gothic face modeled on the typefaces of Gutenberg's time. Headlines 2 offers Brush Script, Blippo Black, Hobo, and Windsor. The other packages each offer four weights and sizes (roman, italic, bold, and bold italic) for a single typeface. Two sans serif faces—Futura Medium and News Gothic—are offered, as well as three classic serif faces: ITC Souvenir, ITC Garamond, and Baskerville. Another serif face, Charter, was designed by Bitstream to look good at the LaserWriter's relatively low resolution

of 300 dpi. It does, too; I've taken to using this classy face for my business correspondence. "Faces with Character" shows a number of MacFontware faces printed on the PostScript-based Linotronic L300 at 1270 dpi. "QuickDraw Contenders" shows two faces printed on the QuickDraw-based LaserWriter IISC.

On the whole, Bitstream has done an excellent job tackling a challenging task. Many of Bitstream's PostScript faces print out darker on a LaserWriter than similar Adobe faces, which are generally considered the standard by which other faces are judged. Bitstream's versions are not necessarily bad, but I prefer the delicate strokes of some of Adobe's faces. For example, I found Adobe's Futura Medium crisper and more pleasing to the eye than Bitstream's Futura Medium printed at 300 dpi. Unlike Adobe, Bitstream doesn't employ *hints*, algorithms that help smooth and refine characters at 300 dpi. Nevertheless, Bitstream's faces look good at 300 dpi. And hints are a moot point if you're printing on a high-resolution PostScript device such as Linotronic's L300; the samples I printed at 1270 dpi looked great.

To test the QuickDraw-PostScript correspondence, I compared the same document output from a LaserWriter IISC and a PostScript LaserWriter. A few of the line widths didn't quite match (they differed by only two or three points), but on the whole the two versions matched up.

Although I don't have many complaints about the fonts, I will complain about the chintzy packaging. (It's always something!) The 5- or 6-disk sets are packaged in a shrink-wrapped cardboard folder along the lines of an oversize checkbook. Once the cellophane's off, disks and documentation go flying all over the place. A minor point, I concede, but I like to store my fonts in their original packages.

Bitstream has done a fine job, not only of combining two disparate font technologies, but of bringing a set of beautifully rendered classic faces to the Macintosh. If their future faces retain the quality of the first offering, Bitstream will be a force to be reckoned with in the growing world of Mac typefaces.—*Erfert Fenton*

See Where to Buy or circle 813 on reader service card.

★
VISION 1.01**Advanced MIDI Sequencer**

Pros: High timing-resolution; on-screen controller faders; innovative chaining and triggering of sequences; sophisticated editing features; many live performance and control features; flexible file operations.

Cons: Limited editing in Graphic Editing window; SMPTE reference not provided in graphic window; cursor doesn't snap to event start-time when you drag events; key disk with two hard disk installs.

Company: Opcode Systems. **Requires:** Mac Plus; second disk drive; MIDI instrument, interface, and cables. **Hard disk recommended. List price:** \$495.



It looks as if Vision, the latest professional MIDI sequencer software entry in the Mac market, will be a winner. With an architecture that allows you to easily change—and even improvise—the playback of sections and layers of your music, programmable transposition tables that can intelligently change music from one key and scale to any other, and the ability to eliminate undesirable notes as you play, Vision provides features that none of its competitors offer.

Work Faster, but Not Harder

Vision's structure lets you create up to 26 separate sequences (each of which can be assigned to a letter of the alphabet) of any length, each with 99 parallel tracks of music. Vision's Loop Record mode allows you to overdub (add) layer after layer of music while a specific section repeats indefinitely; you can decide to keep or throw away layers of music as you go by using the Enter and Delete keys. You can also use Vision's Punch-in/Punch-out Record mode to isolate and work on a specific trouble spot. The MidiKeys window lets you assign any Mac key to be triggered by any incoming MIDI event. For example, you can punch in and out of record with a foot switch or any MIDI keyboard key. Each track can be *quantized* (all events lined up to a user-definable rhythmic grid) and *shifted* (slightly advanced or delayed relative to all the

(continues)

Traditional Typesetting Vs. 1000 dpi Plain-Paper Typesetting



What you see in the top photo is a traditional type shop, complete with a bulky developing system, toxic chemicals, long rolls of expensive photo-sensitive paper, clean-up supplies, the works.

In the second picture, you are also viewing a complete typesetting system. But with this system, you compose your type with a Macintosh, and you output your type on a **LaserMAX 1000** plain-paper typesetter.

MAXimum Resolution

What's so phenomenal about the LaserMAX 1000 is **1000 x 400 dpi** resolution on plain paper. This means that you can create to your heart's content and print as many variations as you want, at only pennies per page. And with resolution this good, you use plain-paper pages for *final* copy—not just for proofing copy. (Say good-bye to all the toxic chemicals and bulky developer and cluttered clean-up supplies. *And* to the *expense* of all those things!)

MAXimum Speed

The LaserMAX 1000 isn't simply GOOD. It's also extremely **FAST**. Because our engineers don't believe in sacrificing print speed—**EVER**. Most pages print in just **SECONDS**, even when they contain complex graphic images or unusual layouts. Or lots of typefaces. Or lots of type sizes. (As low as 2 point. As high as 2000 point. Or even *higher*.)

MAXimum Affordability

The LaserMAX 1000 costs less than you would think. At a complete price that's under \$8,000, you pay less than **HALF** of what Varityper charges for its 600 x 600 dpi printer, the VT600P. (And remember: the LaserMAX 1000 provides higher resolution and is 10 times faster.)

If you've been waiting for a *plain-paper* typesetting solution that you can enjoy right now with your Macintosh II, IIx, or IIcx, there's simply **NOTHING** that comes close to the LaserMAX 1000. It out-performs them all, at a price that can't be beat.



LM LASERMAX
SYSTEMS™

7150 Shady Oak Road, Eden Prairie, MN 55344
(612) 944-9696 Fax: (612) 944-9151

Circle 342 on reader service card

Macintosh Plain-Paper Typesetting—Fast!

This ad was set with plain-paper type on the LaserMAX 1000!

XCEED™ YOUR MEMORY LIMITS



With the demands of today's software, you need memory products that exceed your existing system memory and enhance the sophisticated features of your Macintosh®.

That's why we developed our Xceed™ Memory Expansion Kits — to provide maximum speed and performance for memory-hungry operating systems, power spread sheets and graphics programs, and to add flexibility when running software programs such as MultiFinder™.

Xceed Memory Kits provide an additional 1 to 8 megabytes of RAM for your Macintosh Plus, SE, SE/30, II, IIx or IIfx. They feature fast, low power

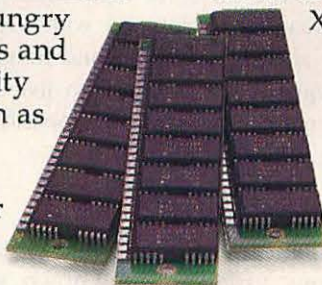
CMOS* SIMM modules populated with superior quality DRAMs. Plus they're backed by our comprehensive service and warranty program.

So contact us today at 1-800-642-7661 for the name of your nearest Micron dealer. And start Xceeding your memory limits.

Micron. Working to improve your memory.

OEM standard and custom inquiries welcome.

* 256K SIMM modules are NMOS technology.



Xceed is a trademark of Micron Technology, Inc. Macintosh is a registered trademark, and MultiFinder is a trademark of Apple Computer, Inc.

MICRON

TECHNOLOGY, INC.

2805 E. Columbia, Boise, ID 83706 (208) 386-3900

Circle 161 on reader service card

other tracks) while the sequence is playing. This makes Vision extremely fast to work with because you can hear the results of these actions without having to stop and restart the music. Even better, both quantizing and shifting are non-destructive; they only affect the playback of the notes, and can be changed at any time.

Tracks can also loop independently of each other, although all loops must start together and can only end on measure boundaries. Another unique feature is that a single track can contain data for a

number of instruments, each receiving different parts on different MIDI channels. This lets you represent a set of instruments that combine to make a single sound as a single track, greatly reducing screen clutter and simplifying editing.

To the average user who often needs to rearrange a song quickly, Vision will be a must. You can trigger individual sequences by typing the letters you have assigned them to on the Mac keyboard; the Queue function plays these sequences in the order you type the letters. A rough mock-up of a song can be made, for example, by recording four sequences—Verse, B-section, Chorus, and Solo—and then simply typing **VVBVBCSBBB** on the keyboard. Changing the arrangement of a song can be much more complex in most other sequencers. If you are in record mode when you type the Queue letters, the resulting track contains copies of the sequences you triggered. These copies, called subsequences, will now play back the sections of your song in the order you defined. The ability to, in effect, put entire sequences of music inside a single track is almost like nesting many levels of files within folders on the desktop: it can make complex song construction much easier. You could, for instance, set up one chain of subsequences to play the drum/bass patterns, one to play the keyboards, and one to automate effects. You could then record linear tracks running the length of the song as well.

By using the Faders window, which has 32 user-definable sliders that can send any MIDI controller message, Vision can perform automated MIDI-volume mix-down, control many different effects devices, and even some lighting boards. These features, combined with Vision's unique abilities to trigger and transpose any sequence in response to live MIDI input, create exciting creative possibilities for live performance.

Fix It Before You Mix

Performances can be edited via an enormous variety of pull-down menu commands. Vision lets you apply multi-level conditions in order to select events by pitch, time location, note velocity and duration, metrical placement within the

measure or beat, or any combination of these possibilities—which goes far beyond the ordinary regional editing found on most sequencers.

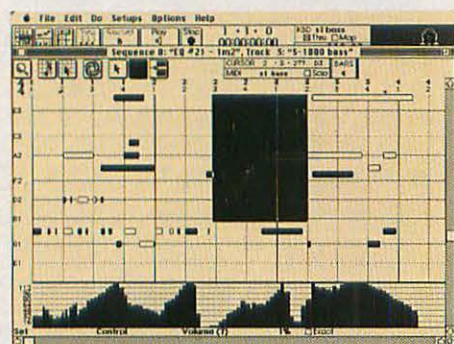
The easiest way to edit individual notes and events is to use the Graphic Editing window (see "The Graphic Editing Window"), where notes can be moved and resized with the mouse, and a user-definable Quantized Cursor mode will keep events aligned to the rhythmic grid after they have been moved. A Strip Chart across the bottom of the screen can show MIDI controller movements, note velocity and duration, tempo, program changes, and the various text events that Vision lets you insert into a track. These text events can store things like lyrics, markers, and cue points; but you can only view them, not enter or edit them, in the Graphic Editing window. It's great to be able to see the lyrics running across the bottom of the display; unfortunately, you can't double-click on the displayed text event and edit it.

To enter or edit any text event (or view the location of events referenced to SMPTE time code, which is necessary for film work) you must use the List Editing window, which displays events as a series of numbers and letters in a chronological listing (see "Vision's Working Environment"). The primary advantage to list editing is that all parameters of all events are editable, and no zooming in or out is necessary. On the other hand, however, once you are familiar with the Graphic Editing window, you will probably want to use the List Editing window only in an emergency.

Aside from the shortcomings of the Graphic Editing window, Vision is an amazingly complete and versatile program that should satisfy the most power-hungry user, whether the application is scoring films or doing dance remixes. While priced at the high end, Vision is more powerful and functional than anything else out there. Even if Vision's super features won't matter to nonprofessional musicians just trying to get a demo tape together, its song-construction features probably will, and that should be good enough reason to take a look at Vision.

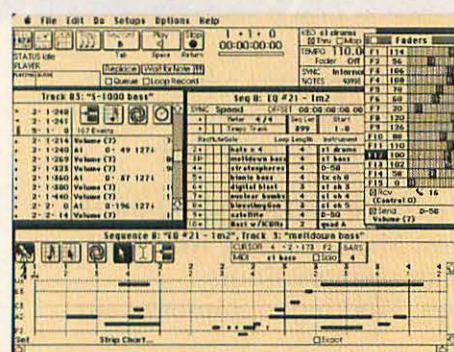
—Charlie Clouser

See Where to Buy or circle 894 on reader service card.



The Graphic Editing Window

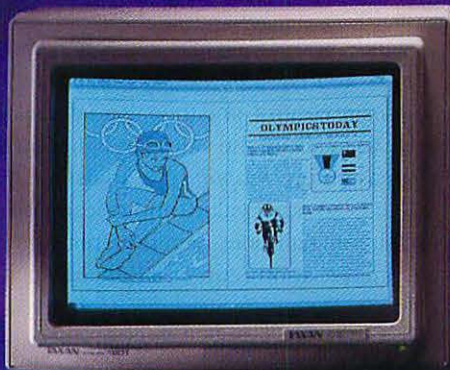
Vision's graphics-based editing screen shows a region selected for editing (white notes on black background), as well as additional notes selected by Shift-clicking (white bars on white background). The Strip Chart at the bottom of the window displays the movement of a slider, in this case controlling volume.



Vision's Working Environment

In a typical screen setup in Vision, the Control Bar is at the top, with the List Editing window under it on the left. The Sequence window (showing the tracks in one of the 26 sequences) is in the center. Here fader number 12 is set to control a synthesizer's volume. The whirlpool-like button near the top of both the Graphic and List Editing windows pops up a menu containing items from the main menus, saving long trips across large screens.

Over The Years, We've Developed The Best Image In Monitors.



Crystal View II for the Macintosh II.
19-inch. Resolution: 1024 x 768.



Ultra Vision 1000. 19-inch multi-
scanning. Macintosh II compatible
and up to 1600 x 1200 resolution.



Crystal View SE for the Macintosh
SE/SE-30. 19-inch. Resolution:
1024 x 768.

We made the first RGB color monitor for Apple® computers. And the only 19-inch, multi-scanning monitor to meet both Apple and IBM® standards.

Now, we have a family of high-resolution, monochrome and color monitors for the Macintosh.*

The 19-inch Crystal View II for the Macintosh II, IICx, IIX. A high-resolution, monochrome monitor that handles larger spreadsheets, dual pages, or B-size CAD drawings without shrinking or scrolling. And it has our unique Vision Enhancement Filter that eliminates glare by 99% and increases contrast 1600%.

For the Macintosh SE and SE-30, we have the 19-inch Crystal View SE. A high-resolution, monochrome system with all the features of the Crystal View II.

Next, the Ultra Vision 1000. A 19-inch high-resolution, multi-scanning color monitor that gives you the widest

frequency range of any monitor its size. Ultra Vision 1000 also features our exclusive Dynamic Beam Focusing to eliminate distortion and maintain precise focus to the corners.

PRODUCT	CAD/CAM/CAE	Presentation Graphics	Desk Top Publishing	Word Processing Spread Sheet
Ultra Vision 1000	✓	✓	✓	✓
Crystal View SE/SE-30	✓	✓	✓	✓
Crystal View II	✓	✓	✓	✓

Regardless of which Taxan monitors you choose, ours not only *look* better, they make you *feel* better with special non-glare filtering, superior brightness, and focus across the entire screen.

That's important. OSHA found that 91% of the people using computer displays suffer from eye strain. And state

and local governments are responding with new work rules. With Taxan, the leader in meeting these new health requirements, you're already protected.

So call 800-544-3888 for sales information and your nearest authorized Taxan dealer. Taxan USA Corporation, 161 Nortech Parkway, San Jose, CA 95134, (408) 946-3400.

See why, in Apple monitors, one brand is visibly better.

**Complete
Monochrome
Display System
for \$1695.**

TAXAN
A Revolution in Graphics

Taxan is a registered trademark of Taxan USA Corporation. Apple and Macintosh are registered trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Illustration created with Adobe Illustrator 88. Courtesy of Adobe Systems. © Adobe Systems Incorporated. Second image courtesy of T/Maker, Inc.

Circle 24 on reader service card

★
AGFA FOCUS S800GS

Gray-Scale Flatbed Scanner

Pros: 400-dpi resolution (800 dpi with interpolation); vectorization (for both bilevel and gray-scale scans); descreening for scanning halftoned images; automatic density adjustment; adjustable sharpening; gamma compensation in dithered halftone mode; competent, basic paint tools. **Cons:** Expensive; scan size limited by memory; limited to 6 bits of gray scale; resolution in 25-dpi increments; no gamma compensation for gray-scale scans; limited dither patterns; doesn't scan to printer; mediocre manual and online help. **Company:** Agfa Compugraphic Division. **Requires:** Mac Plus. **List price:** \$5495.



Desktop publishing has always been driven from two directions: at the low end, by microcomputer mavens making micro-based systems more capable, and from the high end by graphic arts vendors moving down into the desktop world. One new entry from on high is the S800GS scanner from Agfa Compugraphic Division (the folks who brought you the P3400PS 400-dpi PostScript printer). The S800GS is a 400-dpi, 6-bit, gray-scale flatbed scanner that provides a somewhat predictable mix: impressive specifications combined with a high price, a direct sales force, and poorly implemented features.

The scanning hardware itself is quite competent and provides good scans in line-art, dithered-halftone, and gray-scale modes. It captures only 6 bits per sample, though, which is borderline if you're after

The S800GS 6-bit gray-scale flatbed scanner from Agfa Compugraphic Division.



high-resolution imagesetter output. And you can't scan with 4 bits, which you might want to do if your final output will be to a 300- or 400-dpi printer.

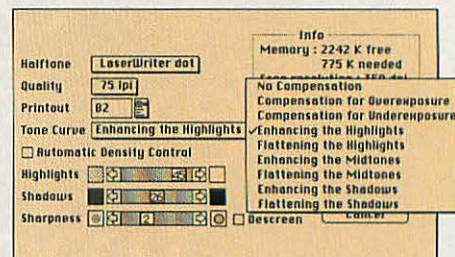
The S800GS has a true maximum resolution of 400 dpi, but the MC View scanning software will interpolate dots between the true sample points, providing an addressable resolution up to 800 dpi. The S800GS's high-res scans provide exceptionally high quality line-art output, as long as you have the disk space as well as some patience when it's time to print. The biggest problem with high-res scans, for those who aren't blessed with unlimited RAM, is that MC View is limited to scanning in available memory.

Controlling the Scanner

MC View's several controls for adjusting scanning differ somewhat depending on the type of scan (gray-scale, dithered halftone, or line art). You can set the Sharpness, for instance, which accentuates the edges of images and can improve the quality of your scans in any of the three modes. An option to Descreen images prevents the moiré patterns you get when you try to scan an already-screened image (such as a photo in a magazine), but the results are pretty blurry.

All the modes use automatic density control (setting contrast and brightness for you), which seems to work better as a guide to manual adjustment than as a tool for capturing final scans. You scan once with the automatic density settings, which gets you pretty good quality, and then adjust those settings manually.

If you're capturing gray scales, for in-



Grabbing Scans

MC View offers automatic density adjustment for both line art and halftones, and a variety of compensations when capturing dithered halftones.

stance, you can get reasonably good brightness and contrast values using automatic density control, and then use a densitometer to measure the values in light and dark areas before *mapping*, or adjusting, those values to other values and rescanning. For dithered halftones, several canned gamma compensation curves—Enhancing Midtones, Flattening Shadows, Compensation for Underexposure—let you adjust scans quickly, often with good results. There's no way to create your own compensation curves, though, and the compensation curves aren't available for gray-scale scanning; you're limited to the contrast and brightness sliders.

When it comes to setting the scaling and resolution of your scan, MC View acts like it's smarter than you are. You tell it the printer resolution, the output quality (reduced, medium, or high), and the scaling percentage you're going to use (choosing from about half a dozen presets), and MC View tells you the scanning resolution. In theory this makes it easier for novices to get good scans, but if you're buying a \$6000 scanner, either you aren't a novice or you won't be for long. You can trick MC View into giving the resolution you want, but only in 25-dpi increments. If you want exact size and resolution—as you often do when capturing dithered halftones—you generally can't get it.

There are only a few dither patterns available in MC View (just two for 300-dpi laser output), so you don't have the flexibility you get from programs like HP's DeskScan (five patterns, including a diffusion dither) or Datacopy's MacImage (a dozen or so patterns, and you can build your own).

(continues)

Ad Lib

AKI LINES

ALBERTUS TITLING

ALBERTUS BOLD TITLING

ALBERTUS BLACK

Allegro

American TYPEWRITER LIGHT

American TYPEWRITER MEDIUM

American TYPEWRITER BOLD

American TYPEWRITER OUTLINE

American UNICAL & INITIALS

American UNICAL & INT. BOLD

American UNICAL & INT. OPEN

© America

© America ITALIC

© America BOLD

AUGUSTEA

AUGUSTEA INLINE

Avant Garde

Avant Garde GOthic EXT LIGHT

Avant Garde GOthic EXT LIGHT OBL

Avant Garde GOthic BOOK

Avant Garde GOthic OBLIQUE

Avant Garde GOthic DEMI

Avant Garde GOthic OBLIQUE

BALLOON BOLD

BALLOON EXTRA BOLD

Bamboo

BANCO

Barcelona BOOK

Barcelona BOOK ITALIC

Barcelona BOLD

Barcelona BOLD ITALIC

Bauhaus LIGHT

Bauhaus MEDIUM

Bauhaus BOLD

Bauhaus HEAVY

Bauhaus HEAVY OUTLINE

Benguiat BOOK

Benguiat BOLD

Benguiat GOthic BOOK

Benguiat GOthic BOOK ITALIC

Benguiat GOthic BOLD

Benguiat GOthic BOLD ITALIC

Berkeley OLD STYLE BOOK

Berkeley OLD STYLE BOOK ITALIC

Berkeley OLD STYLE BOLD

Berkeley OLD STYLE BOLD ITALIC

Bernase ROMAN

Bernhard Tango WSWASH INT

Bodoni BOOK

Bodoni BOOK ITALIC

Bodoni BOLD

Bodoni BOLD ITALIC

Poster Bodoni

Bolt BOLD

Book Tachet

Bookman

Bookman LIGHT WSWASH

Bookman LIGHT ITALIC WSWASH

Bookman DEMI WSWASH

Bookman DEMI ITALIC WSWASH

Bookman BOLD ITAL WSWASH

Bookman OUTLINE WSWASH

Bookman CONTOUR WSWASH

Broadway

Brady

Brush

BUSORAMA LIGHT

BUSORAMA MEDIUM

BUSORAMA BOLD

CARTOON BOLD

Caslon Antique

Caslon Antique ITALIC

Caslon NO. 224 BOOK

Caslon NO. 224 BOLD

Caslon NO. 224 BOLD ITAL

Century BOOK

Century BOOK ITALIC

Century BOLD

Century BOLD ITALIC

Century BOOK COND.

Century BOLD COND.

Century BOLD COND. ITALIC

Cheltenham BOOK

Cheltenham BOOK ITALIC

Cheltenham BOLD

Cheltenham BOLD COND.

Cheltenham BOLD COND. ITALIC

Cheltenham BOLD COND. ITALIC

Cheltenham OUTLINE

Cheltenham OUTLINE SHAD.

Cheltenham CONTOUR

© Citi LIGHT

© Citi BOLD

Clearface* REGULAR

Clearface* ITALIC

Clearface* BOLD

Clearface* BOLD ITALIC

Clearface* OUTLINE

Clearface* OUTLINE SHAD

Clearface* CONTOUR

Dom Casual

Dom Diagonal

Egyptian

Egyptian BOLD

Egyptian BOLD OUTLINE

Élan BOOK

Élan BOOK ITALIC

Élan BOLD

Élan BOLD ITALIC

Élan BLACK

Élan BLACK ITALIC

Élan BLACK ITALIC

Erasmus

Erasmus BOLD

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Erasmus BOLD ITALIC

Franklin GOthic DEMI

Franklin GOthic BOLD

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Franklin GOthic BOLD ITALIC

Garamond BOOK ITAL

Garamond BOLD

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Garamond BOLD ITALIC

Setting Density

Everything above 93 percent black is mapped to 93 percent, and everything below 5 percent is mapped to 5 percent. All other values are squeezed into the 5 to 93 percent range. Photo provided by Special Collections Division, University of Washington Libraries. Photo by A. Curtis. Negative number 33545.



Scanning and Printing

There's no way to scan straight to the printer, or for printing test sheets with multiple scans on a single page (features available in DeskScan Plus and AppleScan, respectively). Instead, you have to scan, print to see the results, and then scan again with different settings. MC View conveniently prints the scan parameters on the sheet when you do print, so it's easy to keep track of which printout is which.

A pencil, an eraser, hollow and filled circles and boxes, a marquee, and a lasso are the basic paint tools in MC View. There's a text tool as well, but it doesn't allow you to choose a font; there's ScanFont and that's it. You can also pick up user-definable line and fill patterns from images and save up to three of them, which is particularly useful for editing dithered halftones. But although you might find these tools useful for quickly cleaning up a scan, count on using a black-and-white or gray-scale editing program for most of your postscan manipulations.

If you want to convert your scans to object-oriented art, you can vectorize them right from within MC View and save the objects to PICT or Illustrator (1.1 or 88) files, or straight to the Clipboard. You can even vectorize gray-scale images. The conversion is pretty good for simple objects, but the resulting files aren't as useful as those resulting from autotracing in Illustrator, FreeHand, Streamline, or Digital Darkroom.

The MC View manual is acceptable if not exceptional. There are several pages showing the output results using different scanning parameters, which can prove very useful when you're trying to predict what output will look like. However, step-by-step procedures often lack illustration, and the manual often glosses over explanations of what the more advanced features are actually doing.

The online help is reasonably good, with a HyperCard-size card for each of the pull-down menus. It doesn't begin to compare to Hewlett-Packard's DeskScan Plus for the ScanJet Plus, however, and the ScanJet Plus gives you 300 dpi (up to 1500 dpi addressable, all in 1-dpi increments) plus 8 bits of gray. If you must have 400 dpi, you can get it from the Microtek MSF-400G, again with 8 bits of gray, for under \$4000 including an impressive software bundle.

The S800GS is not sold retail (only through Agfa Compugraphic's direct sales force), so don't expect the discounts you can get on those competitive machines through dealers. And if you want tech support, there is currently no number to call. The manual gives no number at all, and the only address is in Belgium, so you'll have to count on your Agfa representative for any support. Given the quality, price, specifications, and support of the S800GS's competitors, there is little reason to consider buying this machine.

—Steve Roth

See Where to Buy or circle 706 on reader service card.

AASK 1.0

INIT Manager

Pros: Intuitive graphical interface; buttons for turning all INITs on or off; allows onetime-only changes at start-up; user-definable start-up key command; occupies no memory after start-up completed. **Cons:** Cannot change INIT loading order; always scans System Folder when program is opened. **Company:** CE Software. **Requires:** Mac 512KE. **List price:** \$49.95 (included in MockPackage Plus Utilities 4.4).

INITPICKER 1.0

INIT Manager

Pros: Compact, elegant design; can change INIT loading order; detailed information windows for each INIT; buttons for quickly turning all INITs on or off; allows onetime-only changes at start-up; user-definable start-up key commands; scans System Folder either automatically or on request. **Cons:** Occupies approximately 15K of memory. **Company:** Microseeds Publishing. **Requires:** Mac Plus; System 6.0; Finder 6.1. **List price:** \$49.

INIX 1.1

INIT Manager

Pros: Can create and select combinations of on and off INITs; displays Control Panel and Chooser documents; occupies no memory after start-up completed. **Cons:** Cannot change INIT loading order; must also install as a DA; no onetime-only changes at start-up; no quick way to turn all INITs on or off; start-up key command not user-definable; always scans System Folder when program is opened. **Company:** Natural Intelligence. **Requires:** Mac 512KE. **List price:** \$49.95.



Strangulation by start-up document has become a common complaint among Macintosh owners. It's a cause of fatal system crashes and many less serious, but decidedly undesirable, symptoms. The root cause is the ever-expanding number of useful start-up documents (also called INITs), including desk accessories (DAs) and font managers. Each INIT may be a welcome

(continues)



Read this, and paying for a new computer won't sound so great.

No one wants to pay for bells and whistles they don't need. But that's what most people do when they buy a new computer.

The vast majority don't need the latest technology—even for business. But they pay for it anyway. And end up with a bunch of high-priced extras that are unnecessary, such as music-making and color enhancements.

The truth is, the basic technology behind computers hasn't changed much since the PC and Macintosh were introduced several years ago. And the basic things people need computers for—communications, word processing, accounting—haven't changed much either. What's changed is the price.



Get a Mac Plus starting at \$1,095, or a similarly-configured Lisa from \$695.

A sound solution. A reconditioned Apple computer from Sun Remarketing has the performance, capacity, and power you need to execute all of your applications. The only thing it doesn't have is a big price tag.

Whether you need a single workstation or a whole network, Sun Remarketing offers a full line of Apple products from the Apple /// to the Lisa and Mac Plus; along with the necessary software and peripherals to tailor a system to your own needs.

A no-risk guarantee. We're confident in the quality of our extensively-tested products. In fact, we're so confident

that we offer an unsurpassed 30-to 90-day money-back warranty* on everything we sell. If you're dissatisfied for any reason, just send the product back to us for a replacement or full refund. You won't find a more comprehensive guarantee anywhere on reconditioned or out-of-production computer products.



From simple word processing to annual reports, computers from Sun Remarketing will meet your business needs.

Apple authorized. Sun Remarketing offers a lot more than just low-priced computer equipment. As the only company authorized by Apple Computer Inc. to sell and service their used and out-of-production computers, Sun Remarketing gives you selection, service and support that no other dealer of reconditioned Apple equipment can match.

Free catalog. You can't buy Sun Remarketing computer products in any store. But you can order them directly through our free catalog. Just mail the attached card or call our toll-free number today, and receive the new Sun Remarketing catalog with our complete line of Apple products.

Because you don't have to pay for unnecessary bells and whistles to get a computer solution with a nice ring to it.



For a free catalog call
1-800-821-3221, ext. 366.

enhancement, but unpredictable incompatibilities sometimes cause debilitating problems when a number of start-up documents are in use at the same time.

Until recently, determining which INITs were causing an incompatibility problem meant turning INITs off and then on again by moving them in and out of the System Folder. Once the errant INIT was located, the most common remedy—altering the alphabetical order in which INITs load during start-up—could only be accomplished by changing the names of individual INITs. And turning off all INITs so a memory hog like FullWrite could run on a 1MB machine, or so a finicky game could run at all, required mass file migrations out of (and later back into) the System Folder. A new kind of utility software, the INIT manager, promises to eliminate the need for such awkward procedures.

Three INIT managers are now available, with more in the offing. All are INITs themselves so you install them by placing them in the System Folder. All three INITs can be used to interrupt the start-up process; you can select from the program's window which INITs will be loaded (turned on) and which will not be loaded (turned off) at start-up. Each program's window is also available through a DA or the Control Panel, so you can select which INITs will load the next time you start the Macintosh. Sadly, none of these INIT managers provides a way to unload an INIT that was loaded at start-up, or to load an INIT that was passed over at start-up, except by restarting the Mac. Except for these basic similarities, each program approaches the problems of administering large numbers of INITs in a different way.

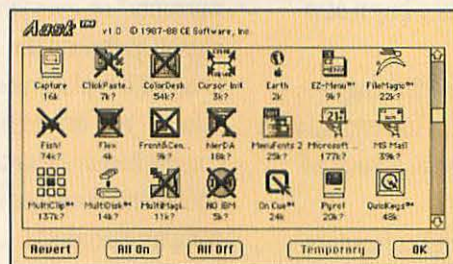
Aask

Aask, part of the MockPackage Plus Utilities collection of utilities and DAs, is the simplest in conception. Aask's window displays the icons of all the INITs in the System Folder (see "Ask Aask"). To turn an INIT on or off, you simply click on its icon (Aask puts an X over the icon to show that the INIT is off). Two buttons expedite matters by allowing you to turn all INITs on or off with a single mouse click. The key command that opens Aask during start-up is user-definable; you can use the

mouse button in addition to or instead of a key command. If you use Aask during the start-up process, you can turn INITs on or off for all start-ups or for that start-up only (a great convenience when you're trying to determine which INIT is causing a problem). Temporary changes cannot be made from the Control Panel version of Aask, however.

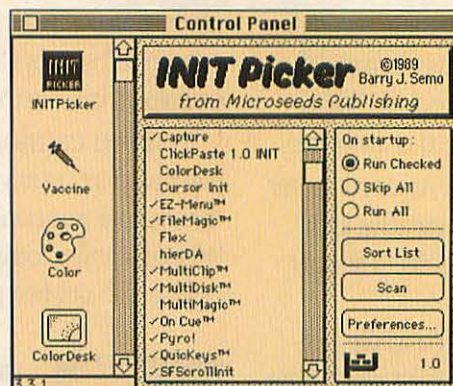
Inix

Unlike the other two programs, Inix operates via predefined combinations of on and off INITs called INIT sets. These are especially helpful if you usually use one of a number of unvarying INIT combinations—for example, if you often want to turn off all INITs except Suitcase II so you can run FullWrite, or if you have collections of special-purpose INITs that you use relatively often but only under certain circumstances. In Inix, you create sets with the Set Editor, which looks and



Ask Aask

If memory is in short supply, Aask can help. Beneath each INIT's icon, Aask displays the amount of memory used by the INIT when it is turned on. Question marks indicate estimated amounts.



Picking INITs

In INITPicker, you can drag file names to change the order in which INITs load, sort the list to put it back in alphabetical order, or sort the list so that loaded INITs are segregated from INITs that are turned off.

works much like Font/DA Mover. In the Set Editor, INITs are shuffled, one at a time, between an on list and an off list; combinations of on and off INITs are then saved for later retrieval.

While Inix's sets can make INIT management easier, other aspects of the program are not so convenient. Unlike the other two programs, Inix requires that you install a DA as well as an INIT file. With the DA or the start-up window, you can select or alter the current set as desired. New sets can be created only in the desk accessory, however. Inix's list of INITs also displays all Control Panel documents and certain types of Chooser files. There are other drawbacks to Inix, for example, the key command that opens Inix during the start-up process isn't user definable; and unless you create special sets to do the job, there is no convenient way to turn all INITs off or on at once.

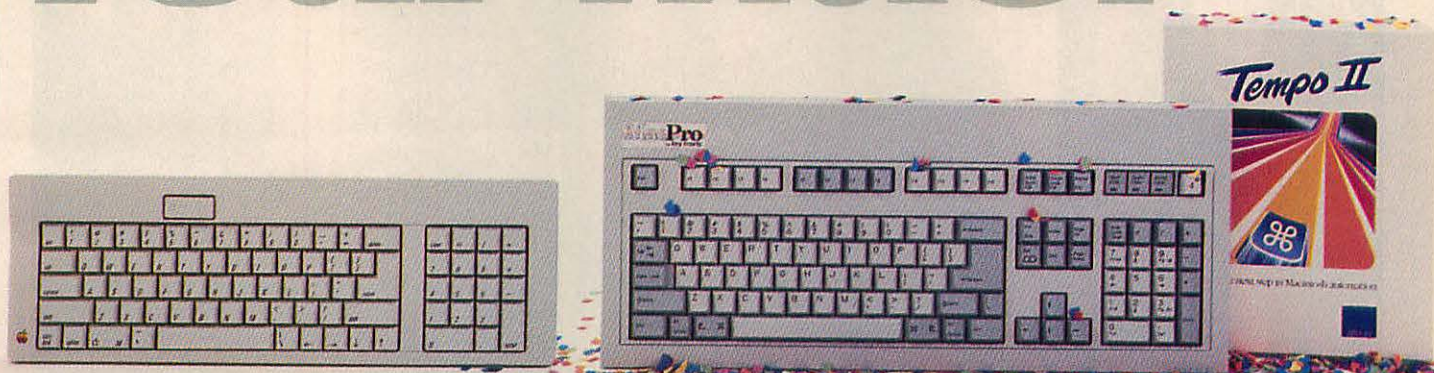
INITPicker

INITPicker's classy color display is one of the many features that set it apart from Inix and Aask (see "Picking INITs"). A check mark next to an INIT's name in the display's scrolling list indicates that the INIT is turned on; clicking to the right of a file name turns the INIT on or off. Radio buttons make it possible to turn all INITs on or off with a click of the mouse. The Once Only button in the start-up window allows you to make changes for that start-up only (temporary changes cannot be made from the Control Panel window).

INITPicker allows you to easily change INIT loading order—by dragging file names to new positions, while both Inix and Aask require you to rename INITs. The Sort command quickly returns the INITPicker list to alphabetical order.

Other notable advantages over Inix and Aask include the fact that INITPicker can be configured to scan the System Folder for INIT files—a time-consuming process—only when requested, rather than each time the program is opened. In addition to a user-defined key command for opening INITPicker at the beginning of start-up, for those times when things get really rough, there is an "ejector button": a second user-defined command for turn-
(continues)

Neither Comes With Your Mac.®



Celebrate! Because you can choose your keyboard when you buy a Macintosh® computer. And the choice is obvious: the new Professional Series MacPro™ by Key Tronic. Now you can have a keyboard with a mile-long list of features, plus a three-year limited warranty and unlimited technical support. And at no extra charge, the

MacPro
by key tronic

MacPro comes with the most powerful Macintosh macro package, Tempo II™ by Affinity Micro-

systems (a \$149.95 retail value). Compare apples to apples, and see why the Key Tronic MacPro is the keyboard of choice. For a free brochure, or for the name of the MacPro dealer nearest you, call toll-free:

key tronic

Professional Series®

1-800-262-6006

IN WASHINGTON STATE: (509) 927-5515

P.O. Box 14687 • Spokane, WA 99214

Key Tronic® and Key Tronic Professional Series® are registered trademarks, and MacPro™ is a trademark of Key Tronic. All other names are trademarks™ or registered trademarks® of their respective companies. Made in USA.

Circle 410 on reader service card

A funny thing happens when you use our new page printer for the presentation of your life.

Introducing the Silentwriter LC 890XL.

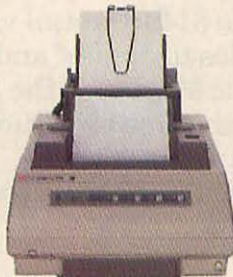


Use our new Silentwriter® for your next big presentation and be prepared for some extraordinary results. Skeptics turn into optimists.

Furrowed brows rise in wonder. And impatient finger-tappers become clenched-fist supporters of your ideas.

A fantasy? Only if your team isn't using an LC 890XL. You see, this laser-class printer is in a class all its own.

It's ideal for work intensive, multiple user environments. With a 68020 processor and 4 MB of main memory (expandable to 8 MB), this work-



horse delivers volumes of eye-popping output and handles graphics-intensive applications easily. It's PostScript® compatible, comes with 35 resident fonts and accepts many more. It works in all operating environments and with every leading desktop publishing and presentation software package. Plus it's from NEC, the \$22 billion world leader in computers and communications.

So the next time you have to make a big presentation to a stone-faced, Mount Rushmore-like committee, look to NEC.

One of the members of our Silentwriter family will bring them to life.

NEC

WE'RE MAKING THINGS BETTER FOR YOU.

Silentwriter is a registered trademark of NEC Corp. PostScript is a registered trademark of Adobe Systems, Inc. © Copyright 1989 NEC Corp.NEC Information Systems, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. 1-800-NEC-INFO. In Canada, 1-800-343-4418.C&C Computers and Communications

Circle 314 on reader service card

ing off all INITs at start-up. Double-clicking on the name of any file name in INITPicker's scrolling list opens the Info window, which contains the kind, size, creation, and modification dates of the file, as well as a list of the resources it contains. A long list of keyboard combinations allows you to select many INITPicker commands and options from the keyboard. On the minus side, unlike Inix and Aask, which vacate memory during normal working hours, INITPicker occupies about 15K at all times.

Which Program Should You Buy?

So if your System Folder is beginning to bulge at the seams with INITs, and you've about had it with the old-fashioned INIT-management methods, which program should you buy? Inix will appeal to you if your work habits demand INIT sets, but its less convenient aspects make it less desirable for most Mac owners. Aask is simple and straightforward, and you might want some of the other programs that MockPackage Plus Utilities offers. But as long as you don't need INIT sets or the other MockPackage programs, INITPicker's ease of use, many helpful features, and capability to change INIT loading order put it head and shoulders above the other two.

—Robert C. Eckhardt

See Where to Buy or circle 702 (Aask), 794 (INITPicker), and 795 (Inix) on reader service card.



DIFFERENT DRUMMER 1.0

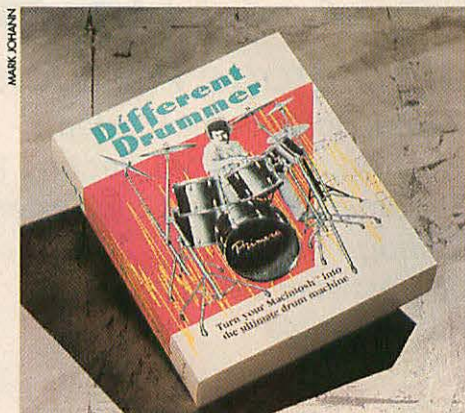
Graphic Rhythm Composer

Pros: Wide selection of high-quality sampled percussion sounds; versatile, easy-to-use editing features; extensive MIDI implementation for controlling stand-alone drum machines and MIDI instruments.

Cons: Lacks ability to vary tempo within a song; no swing feature. **Company:** Primera Software.

Requires: Mac 512K. **List price:** \$99.95.

DP Whether you're a serious MIDI musician looking for a good backbeat, or you just can't stop tapping on tables, Primera's Different Drummer is just what you need to realize your passion for percussion. This graphi-



cally oriented rhythm composer turns the Macintosh into an automated percussionist that beats those music store drum machines at their own game, letting you create your own sizzling rhythm tracks with relative ease.

Boasting an extensive selection of digital samples of real percussion instruments, Different Drummer will substitute capably for a stand-alone drum machine and will also cost you a lot less than the real thing. You can play anything from standard drum-kit sounds—bass, snare, toms, and cymbals—to ethnic instruments like tablas and timbals, and miscellaneous things that go clank or bonk. The recordings sound great, within the inherent limits of the Mac's built-in sound generator (even when fed through a high-quality audio system, the Mac's musical performance suffers from obvious extraneous noise and distortion, and the Different Drummer samples don't escape this problem). And if the sounds provided aren't enough, Different Drummer can load samples stored in several standard sound file formats.

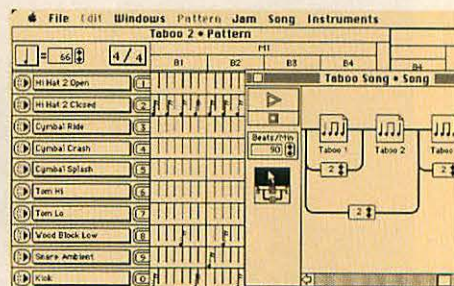
Although Different Drummer lets you freely play any ten sampled sounds directly from the Mac's keyboard, you'll spend most of your time with the program creating rhythmic recordings. Like most drum machines, Different Drummer lets you chain together brief reusable *patterns*, of several measures each, into longer *songs*. This is a time-tested system—it's well suited to the repetitive nature of pop music, and it's economical with memory, because each pattern consumes RAM only once, no matter how many times you use it in a song.

Graphic Rhythms

Compared to a regular drum machine, though, Different Drummer has the big advantage of a note-by-note visual display of your pattern recordings, which makes it much easier to input percussion notes where you want them. Much like a multi-track tape deck, Different Drummer records up to ten instruments each on a separate track—but with the additional benefit of an on-screen representation of all the tracks and their individual notes.

To record a pattern, you start by choosing a rhythmic factor (anything from an ordinary whole note to a septuplet 256th note) that establishes a timing grid. The grid has a lot in common with those snap-to-grid features found in graphics and desktop publishing programs, only the Different Drummer grid works in time as well as space—when you click on a track, Different Drummer records a note in the track at the nearest grid hash mark, ensuring that each note falls on an even division of the rhythmic pulse during playback. You can change a song's grid divisions whenever you like, so it's easy to create rhythmic patterns that are both complex and accurate. On the other hand, if you'd rather pound out the rhythm yourself from the Mac keyboard, you can have Different Drummer record your creation directly, in real time. Don't worry about playing off the beat—Different Drummer still locks each note to a grid division automatically. Either way, you can assign one of nine

(continues)



Where the Beats Are

In the foreground, Different Drummer's Song window lets you link patterns (Taboo 1 and 2) into complete rhythm tracks. The lines connecting the pattern groups indicate repeats, the boxes determine the number of times each group will repeat. The pattern window in the background shows the pattern's percussion instruments and when they play.

642 MB - 5.4 ms Access

The Fastest Data Storage Products Available

- 20 MB to 1.01 GB - Internal and External Systems - to 5.4 ms
- Synchronous NuBus Host Adapter - 4 MB/Second Transfer
- 60, 150 and 320 MB Streaming Tape Backup Systems
- 45 MB Removable Cartridge Hard Disks - 25 ms
- Multiple Partitions With Password Security
- AppleTalk and A/UX Compatible

New Ilcx Internal and External Systems

- 105, 173, 282,
303 and 404 MB
15 to 18 ms



"QUALITY YOU CAN COUNT ON"
Call for data sheets and the name of your
nearest dealer. Dealer inquiries invited.

Macintosh, AppleTalk and A/UX are registered
trademarks of Apple Computer, Inc.



Manufactured By:

MicroNet Technology, Inc.

20 Mason • Irvine, California 92718
Tel: (714) 837-6033 • FAX: (714) 837-1164
AppleLink: D1656 • CompuServe: 76004,1611

Distributed By:

CAL-ABCO

6041 Variel Avenue • Woodland Hills, CA 91367
Sales: (800) 669-2226 or (818) 704-9100 ext. 311
FAX: (818) 704-7733 • Canada: (800) 387-4345

Circle 275 on reader service card

accent levels to each note individually, giving you an effective dynamic range.

Once you're ready to combine your patterns into a song, Different Drummer's graphics again simplify the task. Since a song consists of a single-file succession of patterns, Different Drummer displays the patterns in a horizontal row within a scrollable window (see "Where the Beats Are"). Where a drum machine makes you assign patterns to a song by typing in their numbers out of context, Different Drummer's Song window lets you see exactly where each pattern goes. The mouse makes it easy to add, delete, and move patterns in the chain, and to copy whole patterns as you need them elsewhere in the song. And you're a click-and-drag away from repeating individual patterns or any number of consecutive patterns—repeats can even be nested.

MIDI and More

Even if you already own a MIDI drum machine, Different Drummer might still be a smart buy, depending on how complex you make your rhythm tracks. The program's excellent full-screen editing features surpass anything you can find on a drum machine. What's more, most drum machines are diskless and store only a finite number of notes, while Different Drummer's memory is limited solely by your budget for floppy disks. And if you have one of those new synthesizers that come with built-in percussion sounds, but with weak or absent recording features, Different Drummer is practically a necessity. Whatever your MIDI instrument, a flexible setup window ensures compatibility with Different Drummer.

Still, Different Drummer lacks a few important features found on many drum machines. For one thing, you cannot change tempos within a song. Nor can you automatically add a swing rhythm to your patterns or songs. Also missing is a human-feel feature found on some of the latest drum machines, that subtly varies the timing and tonal quality of each note to more realistically simulate the sound of a human drummer. Intelligent Music's UpBeat lacks the ability to play sampled sounds, but has more flexible rhythmic options, and makes a better choice

for sophisticated MIDI drum machine programming.

Most of us, though, can happily ignore Different Drummer's minor deficiencies. With its combination of slick editing features and built-in, quality sounds, Different Drummer will turn ordinary table tappers into near-pro percussionists in a flash.—*Steve Cummings*

See Where to Buy or circle 762 on reader service card.

★

EPSON LQ-950 AND EPSON LQ PRINTER SOFTWARE FOR MACINTOSH COMPUTERS 1.0

Dot Matrix Printer with Mac Software

Pros: Reliable; relatively quiet; good graphics output.

Cons: User-hostile installation (by Mac standards); disappointing text appearance with most digitized fonts.

Company: Epson America. **Requires:** Mac Plus; System 4.2; Finder 6.0. 2MB RAM recommended.

List price: Printer \$949; software \$69.



The LQ-950 is, as you would expect from Epson, a very fine printer. More's the pity, then, that the Macintosh software sold with the 950 and other Epson LQ printers has so many disadvantages. The LQ-950 is based on software originally developed as Printworks for the Mac, and there are enough quirks in the package to discourage all but the most dedicated Epson fans.

This system's virtues can be easily summarized: if you are willing to confine your printed documents to graphics and the Epson fonts included with the LQ-950, you will have a solid, reasonably fast printer that costs less than an ImageWriter LQ. The difficulties appear when you try to use the Epson with most traditional Mac fonts; you get crisp, clear, funny-looking type, with anomalous thicknesses on the strokes of an odd assortment of letters.

Installing and Stalling

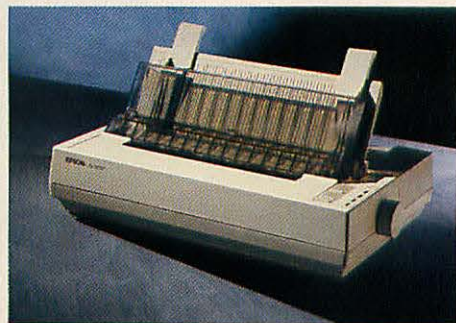
You'll need to know whether the Mac has a parallel or serial interface and whether it has odd, even, or no parity, since the LQ-950 ships to you all set to plug into the parallel printer port of an IBM PC. Conse-

quently you'll have to search around in the manuals and do a bit of DIP-switch flipping to set it up. If you incorrectly set one of the tiny switches, you don't receive any usable error messages; the printer simply fails to do anything. Both the printer and software manuals presuppose more enthusiasm for nuts-and-bolts investigation of the printing process than one typically finds among Mac users, and the troubleshooting sections are weak enough to quickly send you to Epson's 800 number for support.

You use Installer to activate the Epson LQ printer as a choice under the Chooser and to handle the built-in Epson fonts (Compressed, Elite, Pica, Proportional). You must install four more digitized fonts—Epson TMS Roman, Epson Helvetica, Epson Courier, and Epson Symbol—with Font/DA Mover. These special fonts are actually screen fonts adapted by Epson to produce the best results with the 950's 24-pin print head.

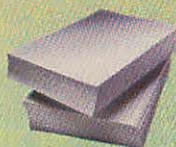
Not Fantastic

In principle, the LQ-950 supports Apple and other third-party fonts, giving reasonable output in Digitized mode, which approximates the bitmap you see on screen. This works best if you have both the size you want to print and a size 2½ times larger in the System Folder, because the Epson driver uses the larger size to scale the bitmaps for high-quality output. In practice, however, what you get on the page often looks very odd indeed—certainly not equivalent to what you'd get from an ImageWriter LQ using the same fonts (see "Not Your Type?"). Stranger yet, when you print out text with non-Epson fonts in Letter or Draft mode, the software



The LQ-950 from Epson America

The BigBin 1000. Because 200 sheets is not enough.



BigBin™
1000-sheet
capacity for
Apple® LaserWriter®
IIIS, LaserWriter
IINT, and Laser-
Writer IINTX

The BigBin is a motorized paper tray that replaces your LaserWriter II's old 200-sheet paper tray to give you 1,000 sheets of paper. That means you can print bigger jobs unattended. Satisfy the paper-hungry needs of a Macintosh® network. And spend less time refilling paper.

Sizable advantages BigBin lets you load 1,000 sheets of letter-size paper. All at once. You can even add a kit that handles legal-size.

Simple addition BigBin is a simple addition to your computer system. Just replace your printer's paper tray with BigBin and plug it into the wall. It's fully approved by Apple Computer for use with Apple LaserWriter IIIS, LaserWriter IINT, and LaserWriter IINTX. And BigBin is covered by a limited 90-day warranty.

Despite the big name, BigBin needs only about a foot of space in front of your printer, and it weighs in at only 14 pounds.

To make the connection BigBin is available exclusively through authorized Laser Connection™ dealers. For more information on how BigBin can maximize your paper handling, call Laser Connection at **1-800-523-2696** for the dealer nearest you.

And be sure to ask for a free copy of *The Sourcebook*™—our exclusive catalog filled with the latest laser printer products and enhancements.

**LASER
CONNECTION™**
A QMS® Company



Circle 104 on reader service card

The following are trademarks of their respective companies: BigBin, The Sourcebook, Laser Connection of QMS, Inc.; Apple, LaserWriter, Macintosh of Apple Computer, Inc.

©1989 QMS, Inc.

This is Epson Courier
This Geneva sample, on
And Monaco starts to
This funny font is Compressed
If you like Times Roman,

Not Your Type?

In Digitized mode, both Geneva and Monaco display uneven thicknesses and bear little resemblance to their on-screen selves, while Epson Courier, specifically designed to work well with the LQ-950, prints out sharp and clear.

This is Epson Courier
This Geneva sample, on
And Monaco starts to look
This funny font is Compressed,
If you like Times Roman, you will be happy

Letter

In Letter mode, Geneva and Monaco print out in completely different typefaces—printer-resident fonts that matched their general spacing arrangements. Epson Courier, again, prints out just fine.

simply selects the printer-resident font that has the most similar spacing. As a result, fonts such as Geneva or Monaco bear little resemblance to their screen representations.

For best results, what you really want to do is use Epson's own fonts on the printed page, regardless of what you see on the screen. To do this, Epson supplies Font Adjustment, a DA designed to let you associate the fonts that appear on screen with the resident fonts on the LQ printer. This way, you can print out text in Epson Courier, for example, that you have marked on the screen as Geneva, although clearly, what you see is not at all what you'll get. You will find, as you use the LQ-950, that the output quality of its resident fonts exerts a subtle pressure to do things

Epson's way (catering to the printer's strong points) rather than the Macintosh way, in which it is assumed you can have on paper what you see on the screen.

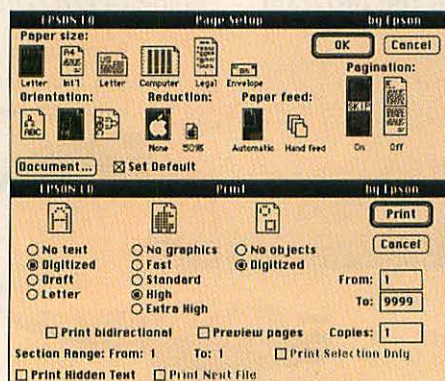
Epson's dialog boxes (see "A Dialog with Epson") replace the familiar ones in nearly all applications (there are instructions for making this work). A preview mode displays a reduced view of the document, and a moving bar on the scaled document shows the progress of the print job. And a set of application notes provided with the hardware and software manuals list the idiosyncrasies of the printer when it is used with various popular software packages. These range from memory problems to restrictions on point sizes of text available for use with particular applications.

Not Yet

The Epson LQ-950 printer is great at handling graphics and its own fonts, and it promises to be mechanically trouble-free. However, installation is a nuisance by Mac standards, performance with many popular fonts is disappointing, and the tinkering required from one application to the next is exactly what the original Mac printer interface was designed to avoid. One can only hope that this product gets enough support from Epson to evolve into a system of ImageWriter-like simplicity.

—Charles Seiter

See Where to Buy or circle 771 (Epson LQ-950), or 770 (Epson LQ Printer Software) on reader service card.



A Dialog with Epson

These snappy dialog boxes for Page Setup and Print replace Apple's old standards when you select the Epson LQ. Bidirectional printing is a key convenience option; you may want the slower unidirectional printing for more nearly letter-quality results.

★ EXPRESSWRITE 1.01

Letter-Writing Desk Accessory

Pros: Easy to learn; good mail merge feature; automatic stationery and standard paragraphs; good tutorial. **Cons:** Doesn't include page preview; doesn't support graphics. **Company:** Exodus Software. **Requires:** Mac 512KE. **List price:** \$99.95.

QUICKLETTER 1.0

Letter-Writing Desk Accessory

Pros: Supports graphics and multiple windows; good page-preview feature; includes Spellswell spelling checker and proofreader; user-defined keyboard shortcuts. **Cons:** Cumbersome interface; no mail merge; graphics can't be moved on page. **Company:** Working Software. **Requires:** Mac 512KE. **List price:** Version 1.01 \$124.95.



Now, while you're still inspired, you'd like to dash off that crucial business letter without quitting the application you're in. Two new desk accessories, ExpressWrite from Exodus Software and QuickLetter from Working Software, let you do just this. They offer many similar features, including automatic letterhead, complete font control, rulers, top and bottom margin settings, search and replace capabilities, and keyboard shortcuts. ExpressWrite has a mail merge feature, QuickLetter doesn't. QuickLetter, however, supports graphics from any paint or draw program, while ExpressWrite does not. In fact, QuickLetter includes quite a few more bells and whistles, as well as some additional crucial features. But in terms of providing absolute ease-of-use, a logical interface, and well-written tutorial and documentation, ExpressWrite is the stronger candidate.

ExpressWrite

The ExpressWrite manual begins with a concise, comprehensible tutorial for beginners, followed by a reference section for the more experienced Mac user. The ExpressWrite interface is so friendly that you can skip the documentation and use (continues)

The Story Of Apple® & Eve.™

In the beginning, there was an Apple. & a lot of software. Great stuff to use. Great stuff for pirates to copy free.

Then came a bigger, more powerful Apple called the Mac. The temptation for free software rose once more. & piracy again had its way.

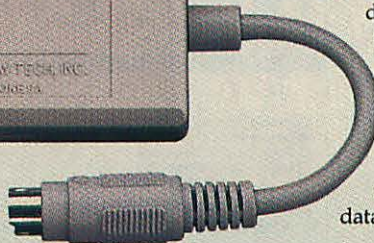
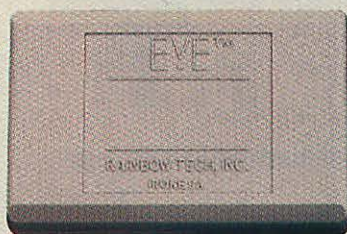
Then Eve arrived. To quickly end the free-loaders' rule. & the rest is history.

Introducing EVE for the Apple—the software developer's key to a secure return on development investment.

EVE protects Macintosh software from piracy—with a simple but virtually foolproof concept: The software won't run unless the EVE hardware key is plugged in. And only those who purchased the software have a key that works with the program.

To developers, EVE's implementation is simple. Key codes are imbedded in the software which require a correct response from EVE any time the program is accessed. Without EVE, the software doesn't run.

And to users, EVE is totally transparent. The software runs as if EVE wasn't even there. It's that simple.



KEY FEATURES:

- For the Macintosh SE and II • Developer implemented • Completely transparent to the user • Permits unlimited backup copies • Seven programmable security locks • Up to seven programs per key • Multi-level password-based access • Installs via any Mac ADB connector • Compact and easy to install

EVE. The perfect companion to Mac software. For additional information, call Rainbow Technologies. European inquiries can be conveniently made to Rainbow Technologies Ltd, United Kingdom.

Rainbow Technologies also provides the SentinelPro and Sentinel-C hardware keys to protect software developed for IBM PCs, PS/2s and compatibles, and the Atari ST. And the DataSentry for PC users who want to protect data files.



RAINBOW TECHNOLOGIES

18011-A Mitchell South, Irvine, CA 92714 • (714) 261-0228 • TELEX: 386078 • FAX: (714) 261-0260
Rainbow Technologies, Ltd., Shirley Lodge, 470 London Rd., Slough, Berkshire, SL3 8QY, U.K., Tel: 0753-41512 Fax: 0753-43610

© 1989 Rainbow Technologies. All product names are trademarks of their respective manufacturers.

Circle 106 on reader service card

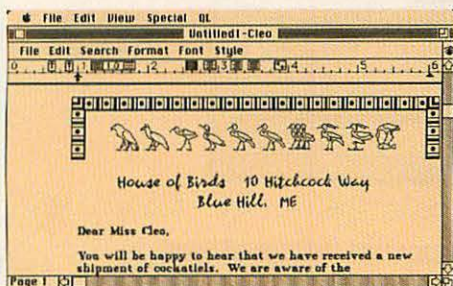
the detailed index to look up any specific problems you run into.

The Status Bar, or Icon Bar, at the top of the window displays 12 icons that represent all the functions you need. Most of the icon commands are also found in the ExpressWrite pull-down menu. Once familiar with these functions, you can refer to a cheat sheet for ⌘-key equivalents.

Automatic Everything

Both programs feature automatic stationery. ExpressWrite allows you to write a form letter, format it with tabs and margin settings, and Save As Stationery. Each new letterhead or form letter that you create can be saved, stored, and listed in the Stationery menu. In addition, using the Standard Paragraph feature you can store your most commonly used paragraphs in a folder that can be easily accessed by selecting the paragraph icon on the right side of the Status Bar.

The mail merge feature for letters, envelopes, and labels is uncomplicated



Default Stationery

Any graphic can be pasted onto a QuickLetter document to create your letterhead. Once pasted, however, the image cannot be altered in any way, and it can take several attempts to center the graphic on the page.



Mail Merge

The Status Bar at the top of the document displays all the functions of the program as icons. The mail merge window appears in a spreadsheet format as a separate window.

but effective and takes the angst out of that often odious task. Each Mail Merge file can hold up to 32K of data. You can import data from any database program into a merge file as long as each field is separated by tab stops. ExpressWrite also has a Find and Replace feature and an Auto Save option.

A Few Minor Details

Aside from ExpressWrite's lack of graphics support, it has other minor, but nevertheless irksome, drawbacks. You can only open one ExpressWrite document at a time. ExpressWrite does not have a line-space option, and although there is a page-break marker, it does not have a repagination command. (If you could view the entire document before printing, the lack of a repagination command wouldn't be so bad.) Although ExpressWrite allows envelope previewing, it lacks QuickLetter's page-preview feature. Similarly, there are sliding tab stops, but no sliding margin stops. Setting the margins is a cumbersome task; you must enter numerical calibrations for left, right, top, and bottom margins in a dialog box. Why you can't set the margins the same way as tab stops is a mystery.

Finally, there is no way to cancel the Quit command. Still, these minor problems do not really mar the overall efficiency and effectiveness of ExpressWrite.

QuickLetter

The documentation for QuickLetter includes a section explaining basic Macintosh operations such as scrolling, cutting, and pasting. But despite this elaborate and carefully prepared tutorial, getting the hang of this program involves flipping from page to page in the documentation to find solutions to even the most basic questions. Also, the interface is not as easily assimilated as ExpressWrite's. Still, QuickLetter does have more features, so if you are willing to take its hurdles in stride, it could be for you.

On or Off, Yes or No

The rules for turning on and off the automatic stationery feature were confusing. The Make Default Stationery command allows you to have the letterhead

automatically displayed when you open up QuickLetter. Consequently, this command was on when I thought it was supposed to be off and vice versa. In order to print the letterhead with your letter, you must select Print Picture in the Page Preview dialog box, which allows you to line up the text of a letter with the letterhead in the printer.

The graphics feature is confusing, too. You can paste a graphic from any paint program into your document, but the image automatically shoots to the upper left-hand corner of the page, and *cannot be moved*. There are ways to get around this, but it can often take several tries to get the letterhead to look the way you would like it to. If you don't like the way your letterhead looks, or if you made a mistake, it can not be fixed. You have to create a new document and import the graphics all over again.

More Good Stuff

Even though the graphics won't budge once pasted down, formatting the rest of the letter is a snap with QuickLetter. There is a page-preview feature with an added bonus; you can drag the text around the page with the pointer. You set tabs and margins by sliding markers along the ruler at the top of the document, and the tab feature includes a stop that allows you to line up decimals. Unlike ExpressWrite, QuickLetter lets you to choose line spacing and also offers a repagination command. In addition to the Find and Change feature, Working Software has included its Spellswell spelling checker and proofreading software. QuickLetter also has changeable keyboard equivalents for most menu commands.

Less Might Be More

If you just want to generate letters quickly and painlessly, ExpressWrite is a less costly solution than QuickLetter. In any event, it might be worth giving up some of QuickLetter's flashier features in the interest of a shorter learning curve and eliminating the frustration of using a clumsily orchestrated interface.

—Pamela T. Creighton

See Where to Buy or circle 773 (ExpressWrite) and 855 (QuickLetter) on reader service card.

New Forms of Business.

Paperwork. The essential inconvenience.

Whether it's invoices, travel expenses, office memos or tax returns, Informed™ and Macintosh® computers can help you change mountains of paperwork into well-organized forms of information.

It's a new way to draw, fill out and manage forms.

Design and Draw. Informed Designer™ comes packed with high performance drawing features. All to help you draw crisp, professional looking forms in no time at all.

Grids, guides, rulers, tables, fields, combs, lines, ovals, rectangles, arcs, polygons, type — plus a whole lot more. With over 1/1000th of an inch accuracy.

Draw or scan.

Make revisions in minutes. No more obsolete forms.

No. 6 7 - 1 3 - 2 9 4

Draw combed fields or sophisticated tables as easy as drawing a box.

Fill Out. With Informed Manager™, filling out forms becomes an effortless, error free task.

Add intelligence to your forms so they can think for themselves. Eliminate repetitive typing with powerful calculations, choices and automatic lookups. Create customized on-line help to answer common questions.

Just imagine the results. Assured accuracy on picture perfect forms.

Store, Sort, Search, Retrieve. Since Informed Manager is actually a database, you can organize and manipulate forms like never before. Search and sort at blinding speeds. Print single forms or group them for batch printing.

And because forms are stored electronically, you print less. The bottom line is less paper, less cost.

So it's time to think about forms the new way. Just give us a call. We'd be happy to tell you more.

Then form your own conclusion.

WORLD CORPORATION 12345 - 123 Street New York, New York 12345 Tel: (212) 555-1283

NAME: Smith, John EXTENSION: 7253
DEPARTMENT NAME: Operations DEPARTMENT NO: 5617-A
PURPOSE FOR TRAVEL (ONE OR REQUEST): Spring sales meeting

TRAVEL AUTHORIZATION FORM
No. 6 7 - 1 3 - 2 9 4

Advance check requests must be received by Accounts Payable at least ten (10) calendar days prior to start of travel. Final settlement voucher and funds due World Corporation must be received by Accounts Payable within sixty (60) calendar days upon completion of trip.

PRE-TRAVEL PLANNED EXPENSES

AIR TRAVEL
AGENCY PHONE NO: 5 1 5 1 - 1 3 1 1 7 5
SIGNATURE (ACKNOWLEDGE RECEIPT OF TICKETS): X

Departure: Date: March 21, 1989 Time: 7:45 AM Flight: 7503
Return: Date: March 21, 1989 Time: 6:15 PM Flight: 750
Airline: Northwest Airlines

HOTEL
PHONE NO: 2 1 1 4
San Diego, California: 56789
CHECK OUT DATE: March 21, 1989

OTHER / MISC. EXP.
130.05

CHOICES
Canadian Airlines
Delta Airlines
Northwest Airlines
Pan Am
United Airlines

TOTAL TAX 7.25
SUB-ACCOUNT 40
TOTAL 528.15
RATE 75.00
SUB-TTL 835.00
TAX 17.25
TOTAL 852.25

COMMENTS
See Journal for airline receipts.

PRE-AUTHORIZATION
TOTAL PLANNED EXPENSES 1,592.71
AMT PRE-PAID BY INC (Advance Amt) 1,592.71

OFFICER USE ONLY
DATE: 03/21/89
TOTAL DUE: 1,592.71

Travel Expense Forms

No.	Name	Purpose of Travel
83-01-892	Robertson, Sharon	Meeting with G
43-10-637	Russell, David	Trade show - N
44-29-203	Scott, Karen	POT Contract
20-19-536	Sherman, Glenn	Developers' Co
34-20-200	Slender, Rou	Sales meeting
67-13-294	Smith, John	Spring sales m
72-85-192	Spencer, Ronald	Technology sem
44-30-203	Taylor, Janice	Northen Telecon
362 Forms		

ACTUAL TRAVEL EXPENSE AUTHORIZATION
DATE: 03/21/89
TOTAL DUE: 1,592.71

Get Informed.

Informed
Forms Design and Management

For more information, please call or write:

Shana Corporation
Advanced Technology Center
105, 9650 - 20 Avenue
Edmonton, Alberta Canada T6N 1G1

Tel. (403) 463 - 3330 FAX (403) 428 - 5376
AppleLink CDA0004 MacNet SHANA

Informed Designer

Informed Manager

WINDOW SHOPPING

by Lawrence Stevens

This month I review software that will help you keep a project on track, convert quantities, make writing winning résumés a breeze, and replace the old Mac Scrapbook with something much better

FastTrack Schedule 1.02

FastTrack Schedule from AEC Management Systems (list price \$195) creates attractive Gantt charts (also called schedule or calendar charts) that can help keep your project on track. While FastTrack Schedule doesn't have the calculation capabilities of project-management software like MacProject or MicroPlanner, it does give you more graphic control of your charts than any other scheduling program I've seen.

You begin by specifying a project's start and stop dates and the display intervals (hours, days, weeks, months, or quarters). The dates appear across the top of the screen. You then type in the project's activities, one under the other. You can enter subactivities—component tasks that make up a main activity—by tabbing



RON CHAN

and typing them under the main activity. Clicking next to a main activity compacts (hides) all the subactivities under it and places a bar on the main activity line to represent the total time of its subactivities.

To represent the projected duration of an activity, you select one of the bars from the Tool Box. Dragging from the expected begin date or time to the expected end date or time makes the bar span the two time periods.

FastTrack Schedule can add up the total time a project's subactivities will take, but beyond that, you're basically on your own. You can display the percentage completed by clicking on any subactivity bar, and the program fills in the activity bar proportionately, but FastTrack Schedule can't use this information to reschedule other events. If you select several bars and then extend or contract one to represent an activity that took more or less time to

complete than anticipated—the other selected bars move over. There is no way, however, to link activities so that changing the time period for one automatically affects the others.

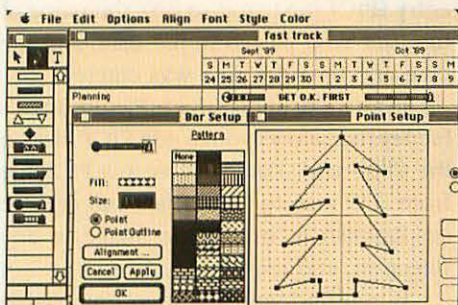
The strength of this package is not in its brains but in its beauty. You can create your own bars and end points, which then appear on the Tool Box, by selecting a pattern, fill, and color (see "Customizing Time Line Bars"). You can also place a MacPaint graphic or text on your chart and specify the color and pattern of virtually all chart elements.

If you manage large, complex projects with many tasks that cannot begin until previous ones are completed, you need project-management software. For simpler projects, however, FastTrack Schedule makes it easy to create and display a schedule so everyone will know exactly what needs to be completed to keep your project on schedule.

ResumeExpert

ResumeExpert from A Lasting Impression has 42 résumé and cover-letter templates and comes in two versions—one for Microsoft Word 1.05, and one for Word 3.01 and later versions. The manual is similar to a typical résumé handbook that contains tips on writing résumés along with samples. The advantage ResumeExpert has over a handbook, however, is that once you've selected the sample résumés you want to use as a guide, all you have to do is insert your own information in the program's Word version of the template, which is a completely formatted document containing tabs, spacing, fonts, and other layout elements.

The templates cover most situations. For example, if you want to make a career change, there are templates that emphasize (continues)



Customizing Time Line Bars

FastTrack Schedule lets you customize the bars that span the time intervals for a given activity. You can select the pattern and color for the bar and the fill, which indicates the percentage of completion. You can also add a symbol to be used as the start or end point of the bar by using the dot-to-dot utility above or pasting in a MacPaint image. Once you create a bar, it is listed in the Tool Box (left side of the screen), and can be placed on the chart at any time.





To get the most out of this box, you need to get this box.



Now that you've had the good sense to put a Macintosh® in, may we suggest something sensible to put in your Macintosh.

The Microsoft Office. The essential tool set designed expressly for business professionals.

It's four of the most successful programs to ever light up a Macintosh screen, in one specially-priced box. Including Microsoft® Word 4.0, the best-selling word processor in Macintosh history.

Microsoft Excel 2.2, a powerful new version of the industry standard already used by 90% of Macintosh spreadsheet users.

Microsoft PowerPoint™, the program that lets you turn routine slides, overheads and audience handouts into visual masterpieces.

And Microsoft Mail, the smartest, most efficient route for office communications.

All of these applications work brilliantly alone. And even better together. Thanks to innovative features like Excel/Word warm links, shared user dictionaries and mail integration.

And since your work group will need all four of these programs sooner or later, you'll want to buy them sooner. Because for a limited time, The Microsoft Office is priced 35% below what the same products cost individually.

So now that you have the computer that has everything going for it, get it everything it needs to get going. The Microsoft Office.

For more information call (800) 541-1261. Or stop by your Microsoft dealer today.

Microsoft
Making it all make sense®

PROGRAMS PLUS

**CALL MONDAY THRU FRIDAY 9 AM - 9 PM
SATURDAY 9 AM - 6 PM (EASTERN TIME)**



MAC-101 Keyboard by DataDesk

Replace your Mac's keyboard with the **MAC-101** by DataDesk. The positive tactile, firm feel 101 includes a full numeric keypad, 15 function keys, 6 page control keys, and a T-style cursor pad. Includes 101-Keys desk accessory software, a powerful macro utility that allows you to exploit the full power of the function keys in almost any Mac application. Available in ADB and non-ADB versions. **\$139.**

WORD PROCESSORS & DESKTOP PUBLISHING

Access Technology		Ready, Set, Go! 4.5	275.
Mind Write	95.	Letra Studio	275.
Mind Write Express	129.	LetraFonts (Various Vol. 1-45 ea.)	65.
Advanced Software		Microsoft	
DocuComp	Special 89.	Microsoft Word 4.0	249.
Aegis		New Horizon	
Showcase F/X	Special 189.	Word Maker	69.
Allan Bonadio Associates		Niles & Associates	
Expressionist 2.0	79.	EndLink	58.
Aldus Corporation		EndNote	75.
Color Extension	175.	Paragon Concepts	
Aldus Persuasion	375.	Nisus	Special 259.
PageMaker 3.01	389.	Preferred Publishers	
Ashton Tate		Vantage	Special 55.
FullWrite Professional	249.	Quark, Inc.	
Broderbund		QuarkXPress V2.0	489.
DTP Advisor	47.	QuarkStyle	175.



DeskPaint 2.0 & ZBasic 5.0 by ZEDCOR, Inc.

DeskPaint 2.0 is a powerful desk accessory that creates, loads, edits and saves bitmap graphics including TIFF, MacPaint and PICT formats. **DeskPaint 2.0's** features include: Auto Trace, Air Brush, Distortion, perspective control and more (**\$65**). **ZBasic 5.0** is an interactive basic compiler with all the tools needed to help serious Mac programmers create applications. **ZBasic 5.0** includes color and full toolbox support, an MSBASIC conversion utility and more (**\$89**).

Caere		Symantec	
Omnipage	555.	More II	249.
Claris		Symmetry	
MacWrite II	185.	Acta Advantage	65.
Design Science		T/Maker Company	
Math Type 2.0	79.	WriteNow V2.0	Special 109.
Emerald City		U.S. MicroLabs	
Smart Art I Text Effects	85.	Font Sizer	75.
Smart Art II Graphic Effects	85.	Word Perfect Corporation	
Smart Art III Advanced Text Effects	85.	Word Perfect	179.
Exodus		Working Software	
Expresswrite	65.	Lookup	30.
Letraset		Findswell	35.
Design Studio 1	459.	QuickLetter	73.



Electronic WordFinder by Microlytics

WordFinder, the smartest and smallest dictionary and thesaurus on the market today. The undisputed standard in thesaurus programs for the Macintosh, is now a portable. This handheld, battery operated unit, has a 4.5 megabyte memory with a 220,000 thesaurus and 110,000 spelling dictionary that fits in your pocket. **WordFinder** will also handle cities, states and proper names. **\$59.**

NETWORKING SOFTWARE & HARDWARE

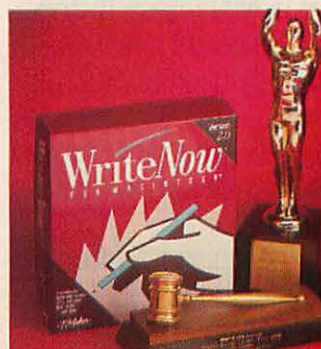
CE Software		Nuvotech	
Quick Mail 1-5 users	175.	TurboNet ST (Din8 or DB9)	30.
Quick Mail 1-10 users 2.0	259.	TurboBridge	319.
Dove		Olduvai Software Font Sharer	149.
FastNet III or FastNet SE	375.	Orange Micro	
FastNet SCSI	779.	OrangePort	209.



MacSnap Memory Boards by Dove Computer

It's a safe bet that no matter what Macintosh model you have, Dove Computer has a **MacSnap** memory expansion product that matches your needs. That's because Dove has an extensive line of high quality memory and productivity enhancement products available. All models listed include Dove's RamSnap software, their intelligent ram management software. We've selected some of the most popular models.

Farrallon		Shiva NetModem V2400	475.
PhoneNET AppleTalk	9.	Net Serial X232	285.
PhoneNET DIN 8 or DB9	35.	Net Bridge or TeleBridge	339.
Timbuktu	65.	Tactic Software Clip Share	109.
TraficWatch	129.	TOPS	
Timbuktu Remote	195.	Tops 2.1 Mac	145.
PhoneNET Repeater	325.	Tops Dos or Net Print	115.
PhoneNET Star Controller	1095.	Tops FlashBox	125.
LaCie Silverserver	89.	Tops Repeater	129.
Magnus		Tops FlashCard	159.
FileMagic	49.	InBox-MacConnection	45.
Microsoft		InBox-Starter Kit	149.
Microsoft Mail 1-4 users	195.	Tops Teleconnector Din8 or DB9	39.



WriteNow 2.0 by T/Maker

WriteNow 2.0 is the long-awaited update of the easy-to-use, easy-to-learn, powerful word processor from T/Maker. The features added to **WriteNow 2.0** include a 100,000 word dictionary and spelling checker, WYSIWYG multiple columns, and graphic support, an unlimited number of open documents, and count for characters, words and paragraphs, and mail merge. ... **\$109.**

AIRBORNE EXPRESS \$3 OVERNIGHT DELIVERY



Tempo II by Affinity

Tempo II can take a series of key-strokes or mouse clicks and turn them into a one key code. Whether your macro just selects a font or performs hundreds of steps through multiple programs, **Tempo II** replays it all with a single keystroke. And as your needs grow, **Tempo II** meets them. Transfer directly between applications, auto-paste text and graphics, repeat your commands 100's of times. Great for automating data transfers! **\$75.**

MODEMS

Abaton InterFax 12/48	325.	MacCompack (2400SA w/Microphone & Cable)	225.
Anchor Automation MacPac 2400E w/software & cable	179.	Prometheus Promodem 2400M Ext. (Software & Cable)	215.
Best Data Products SmartOne 2400/1200 w/software & cable	145.	Promodem 2400SE Int.	199.
CMS CMS 2400BMX	179.	Promodem 2400MII (II, IIX, ILCX)	269.
Hayes Microcomputing Smartmodem 1200	295.	Supra Corporation Supra Modem 2400	149.
Smartmodem 2400M w/smartcom II	459.	U.S. Robotics Courier 1200 (Hayes Compatible)	199.
Practical Peripherals Practical Modem Mini 1200SA	77.	Courier 2400 (Hayes Compatible)	335.
Practical Modem 2400SA	179.	Ven-lol Mac2400E (Int. Mac II w/MS Works)	399.

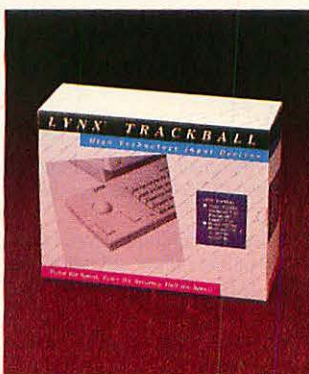


Database by Preferred Publishers

Database can file any type of data you create with your Mac. Color pictures, text and forms may all be stored, and they are all available at your fingertips! Perfect for people who do not require a large sophisticated database. **\$69.**

DESK ACCESSORY PROGRAMS

Affinity Microsystems Tempo II	Special 75.	Smart Alarms Multi-User Appt. Diary (1-4 users)	Special 99.
Affinitile	45.	Smart Alarms Multi-User Appt. Diary (5-8 users)	149.
Casady & Greene, Inc QuickDex 1.4A	31.	Smart Alarms Multi-User Appt. Diary (9-15 users)	199.
CE Software DiskTop	32.	Mainstay Think'n Time	55.
Deneba Software Comment 2.0	59.	Solutions, International Super Glue II	62.
Icom Simulations MacKern	119.	SmartScrap & The Clipper V2.0	45.
Jam Software Smart Alarms w/Appt. Diary	Special 49.	Symmetry HyperDA (Req. 512K)	35.



LYNX Trackball by LYNX Computer

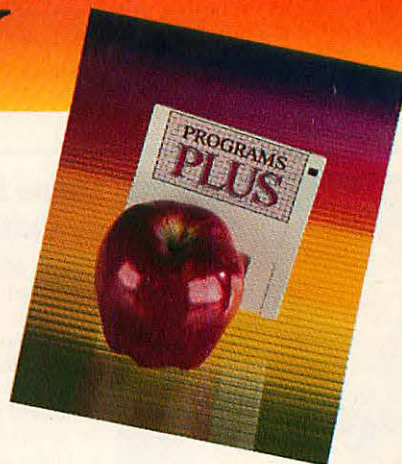
The attractive, easy-to-use **LYNX Trackball** offers you precise fingertip cursor control at an affordable price in a sleek desktop profile. A patented high-technology encoder which is also used in sophisticated aerospace applications assures built-in quality. It is ideal for desktop publishing, CAD/CAM and graphics. Available for all Mac and Apple models. It offers you twice the speed, twice the accuracy at half the space. **\$65.**

Specials good through October 31, 1989

Now Toll-Free In Canada
1-800-344-7753

Monday thru Friday
9 a.m. - 9 p.m.
(Eastern Time)

Saturday
9 a.m. - 6 p.m.
(Eastern Time)



SuperPaint 2.0 by Silicon Beach Software

Paint and Draw capabilities in one program. AutoTrace, Bezier curves, Color Preview, SuperBits (bit by bit editing at any resolution), documents up to 6 x 6 feet and free rotation. **\$128.**



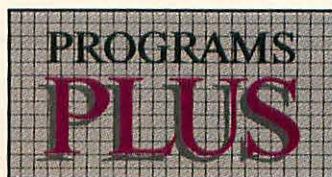
BUSINESS SOFTWARE

Abacus Concepts StatView II (Mac+, SE, II w/68020 & 68881)	295.	Microsoft Microsoft Works 2.0	185.
StatView SE+ Graphics	225.	Microsoft Excel 2.2	249.
A.E.C. FastTrack Schedule	115.	Nolo Press WillMaker 3.0	32.
AEC Information Manager	409.	For the Record	29.
Ashton Tate Full Impact	249.	Paracomp Milo	155.
BrainPower ArchiText	169.	Power Up Calendar Creator	38.
Casady & Greene A.C.E. (Access Control Environment)	Call	Fast Forms	Special 89.
Chang Laboratories C.A.T.	225.	Pro Plus WallStreet Investor V3.0	449.
MacCalc	83.	Satori Software Bulk Mailer 3.3	78.
Claris MacProject II	379.	Bulk Mailer Plus	189.
Smartform Designer	299.	Select Micro Systems, Inc. Exstatix	209.
Individual 101 Macros For Excel	35.	MapMaker	209.
Mainstay Capture	49.	SoftView MacInUse	42.
Mac Flow 3.0	125.	Form Set Business Forms	52.
Mac Schedule	115.	Symmetry KeyPlan	339.
Meta Software Meta Design	179.	Synex Mac Envelope 4.1	Special 55.
Meta Planning International	325.	Systat	
Micro Planner 6.0		Systat 3.2	
		(Specify MacPlus, SE or Mac II)	459.
		Fastal	165.



GOfer by Microlytics

GOfer - the ultimate textfinder. As a desk accessory, **GOfer** is a powerful utility that searches, finds and retrieves text from anywhere on your disk. A phrase, a fact, a note, a date; if you need it, **GOfer** will find it in seconds. Automatically imports the section of text into the document you're currently working in. **\$47.**



FAX: 203/381-9043
Inquiries: 203/378-3662
Canada: 1/800/344-7753
75 RESEARCH DRIVE
STRATFORD, CT 06497
1/800/832-3201

AIRBORNE EXPRESS OVERNIGHT DELIVERY \$3



Casino Master by Centron

Casino Master Deluxe Version is an integrated package of five casino games in dazzling color; runs on Mac II, Ix and Ilcx. Play Blackjack, Craps, Roulette, Video Poker and Baccarat. All games have mouse-controlled betting, long-term storage of wins/losses. Complete manuals include rules, strategy. Standard version has same features, runs on all Mac's with 512K. \$55.



Insight Expert Accounting Series by Layered Inc.

A series of stand-alone or fully integrated accounting modules for general ledger, accounts receivable w/billing, accounts payable, payroll, inventory control and time billing which gives you answers, advice and analysis. Now includes *Data Import!* \$409.

HYPERMEDIA & LANGUAGES

Bantam Publishing	Aztec C + SDB	95.
Complete HyperCard Handbook	Aztec C + MPW	95.
Beacon Technology	Microsoft	
HyperBible King James	Quick Basic	65.
HyperBible International	Olduvai Corporation	
Borland	Plus 1.1	109.
Turbo Pascal	Power Up	
Bright Star Technology	Hyper Tutor	29.
Hyper Animator	Symantec	
Broderbund	Think C	155.
Whole Earth Catalogue	Think Pascal	95.
(CD ROM)	Just Enough Pascal	49.
Consulair	TENpointO	
Mac 68000 Dev. System	FocalPoint II	117.
Digitalk, Inc.	the Result Software	
Smalltalk/vmac	Dialoger	59.



Smart Alarms/Multiuser by Jam Software

Smart Alarms is a desk accessory that creates reminders which interrupt you at an appointed time. Appointment Diary is a desk accessory calendar for all of your appointments. \$49.

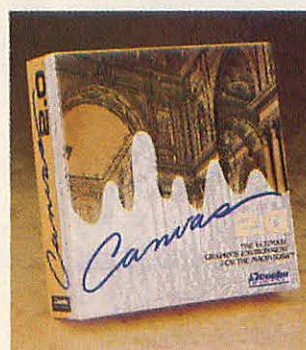
Hyper Press	Timeworks	
Icon Factory	Hyperworks Organizer	60.
Script Expert	Trendware Corporation	
Intelligent Developer	Stack Cleaner	29.
Icom Simulations	HyperTools 1 or 2	52.
HyperTMON	XCAL	Special 89.
Individual Software	T.M.L.	
101 Scripts & Buttons HyperCard	TML Pascal II V3.0	109.
Manx	TML Source Code Library II	39.
Aztec C	Zedcore	
Aztec C Unitools	ZBasic 5.0	Special 89.



MacBottom HDDs by PCPC

The award winning **MacBottom Hard Disk Drives** are the perfect complement for your hard working Macintosh. MacBottom drives are available in 45 (\$789), 70 (\$999), 84 (\$1249) megabyte models, platinum color and offer fast average seek times, plus high data transfer rates (up to 1500 kilobytes/second) in a low profile case. An optional internal Hayes compatible modem is also available.

Visit Us In The Electronic Mall™ On CompuServe - GO **PP** PROGRAMS LVS



Canvas 2.0 by Deneba Software

Canvas 2.0, one of the top graphics programs, includes many new features: unlimited layers, positioning to 1/64,000 inch, Bezier curves and polygons, and 16.7 million colors on the Mac II. Converts but mapped images into objects. **Canvas 2.0** rivals CAD programs. For business graphics, presentations, desktop publishing, engineering or architecture, **Canvas 2.0** helps you create. \$169.

OUR POLICY

- ★ VISA and MASTERCARD accepted. No surcharge.
- ★ Your credit card is not charged until we ship.
- ★ If we must ship a partial order, the shipment that completes the order is sent freight free.
- ★ All shipments insured; no additional charge.
- ★ Upon receipt and approval, personal and company checks now clear the same day for immediate shipment.
- ★ No sales tax except orders shipped within CT, add 8% tax.
- ★ COD maximum \$1000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.
- ★ 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items subject to availability.
- ★ Call us anytime Monday thru Friday 9:00 to 9:00 Eastern Time, or Saturday 9:00 to 6:00 Eastern Time. You can call our business offices Monday thru Friday 9:00 to 5:30 Eastern Time at (203) 375-3560.
- ★ Purchase Orders accepted at our discretion, for more information call (203) 378-1926, 9:00 to 5:30 Eastern Time.

SHIPPING

- ★ **Continental U.S.:** Add \$3.00 per order to cover Airborne Express Overnight, unless UPS ground delivers next day. Some areas require an additional day.
- ★ All (instock items) ordered by 6:00PM Eastern Time Monday thru Friday will ship that evening, barring computer failures or other catastrophes.
- ★ **Alaska, Hawaii, outside Continental U.S., APO and FPO;** call (203) 378-3662 or write for shipping information.
- ★ Mail-in orders (especially from foreign countries), please furnish telephone or fax number.



Spelling Coach 3.0 by Deneba Software

Spelling Coach Professional is much more than just a spelling checker, it's a complete reference system. It can spell check your document against Merriam Webster's 9th, Legal and Medical dictionaries which together contain a total of 158,000 words. You also have instant access to a 245,000 synonym thesaurus, and, the most amazing feature of all: a complete set of definitions. **\$115.**

BLANK MEDIA

Single Sided 3 1/2" Diskettes		
Bulk (Sony) 3 1/2" SS/DD Disks (10)	14.	Centech 3 1/2" DS/DD Color Disks (10) 19.
Sony 3 1/2" SS/DD Disks (box of 10)	16.	Sony 3 1/2" DS/DD Disks (box of 10) 15.
Double Sided 3 1/2" Diskettes		Maxell 3 1/2" DS/DD Disks (box of 10) 16.
BASF 3 1/2" DS/DD (box of 10)	15.	Verbatim 3 1/2" DS/DD Disks (box of 10) 15.
Bulk (Sony) 3 1/2" DS/DD (10)	14.	3M 3 1/2" DS/DD Disks (box of 10) 20.
		Peripheral Land Turbo 40 Cartridge 109.



MacEnvelope 4.1 by SYNEX

Envelope/label printing with Postal bar coding. Saves postage, speeds delivery. Create/save layouts. Keep address files. Import/export. Bulk printing. Graphics, colors. Sort by Zip. Any fonts, styles and sizes. ... **\$55.**

DISK DRIVES/HARD DISKS/UPGRADES

1 Meg SIMMS	Call	MacSnap 524S (512E to 1MB w/SCSI)	239.
Cambridge MacLite Z88 w/160k	725.	MacSnap 548 (512K to 2MB)	449.
MacLite Z88 w/544k	969.	MacSnap 548E (512E to 2MB)	549.
CMS		MacSnap 548S (512E to 2MB w/SCSI)	479.
SD Ser. MacStack SD30 (Mac+/SE/II)	539.	MacSnap Plus 2	
Cutting Edge Under The Mac 20	439.	(MacPlus to 2MB Non Expandable)	312.
Cutting Edge 800k Drive	Special 149.	MacSnap 25E or 1024 Option	
Under The Mac 30	499.	(1MB or MacII Memory Exp.)	312.
Under The Mac 40	549.	SCSI Interface/Port	109.
Dolphin Systems Flipper 44	1139.	Mobius Technologies	
Integra 20	545.	MultiScreen Video Card	315.
Integra 30	595.	Peripheral Land Infinity Turbo 40 MEG	1119.
Integra 40	765.	Personal Computer Peripherals	
Integra 60	815.	Platinum Color. Optional Built-In Modems.	
Integra 80	1175.	MacBottom HD-45	
Dove Computer (All on Special)		(45MB SCSI Hard Disk)	Special 789.
Marathon 030 Accelerator	999.	MacBottom HD-70	
MSE 4 (16 Mhz w/1MB & Math Chip)	1159.	(70MB SCSI Hard Disk)	Special 999.
MacSnap 524E (512E to 1MB)	187.	MacBottom HD 84	
MacSnap 2S	349.	(84 MB SCSI Hard Disk)	Special 1249.
MacSnap 4S	699.	HD-WSI	199.



MacTilt by Ergotron

MacTilt relieves the physical discomfort caused by crouching and squinting to see the Macintosh screen. By raising the Mac 4-inches and providing unequalled tilt/swivel capabilities, the **MacTilt** provides the increased height necessary to bring the Mac up to eye level and the flexibility necessary to reduce eye, neck and back strain. Models are available for the Mac Plus, SE and Mac II. **\$68.**

GRAPHICS SOFTWARE

3G Graphics		Generic Software	Generic CADD 85.
Images w/Impact Graphics & Symbols	52.	Basic Home Design	32.
Images w/Impact Business 1	65.	Bathroom Design	49.
Adobe Systems		Comm/Residential Plumbing	32.
Adobe Illustrator 88	289.	Comm/Residential Furnishing	32.
Streamline	229.	Flow Charts & Schedules	16.
Adobe Collector's Ed. 2	139.	H.V.A.C. Heat/Vent/Air Conditioning	32.
TrueForm	239.	Home Landscaping	16.
Newsletters	239.	Kitchen Designs	49.
Forms & Schedules	289.	Landscape Architecture	49.
Presentations	289.	Pipe Fitting	49.
Aldus Freehand	349.	Graphsoft Mini Cad +	519.
Altsys Corp. Fontographer 3.0	279.	Blueprint	349.
FontTastic Plus 2.02	52.	Informix Wingz	259.
Art Importer	69.	Innovative Data Design Dreams	265.
Ashton Tote Full Paint	67.	Residential Construction	135.
Broderbund Print Shop	35.	MacDraft 1.2B	144.
Drawing Tables	75.	Letraset ImageStudio 1.5	275.
Casady & Greene Vivid Impressions	67.	MacroMind MacroMind Director	449.
Quill Pack (vol. 8 & 20)	89.	MathSoft MathCAD	309.
Headline Pack (vol. 10-12)	125.	Metro ImageBase Art Deco	85.
Modern Pack (vol. 7, 14-18) or		Borders & Boxes	85.
Distinctive Pack (vol. 8, 19-22)	159.	Business Graphics	85.
Classic Pack (vol. 3-6, & 13)	159.	Computers & Technology	85.
CE Software Calendar Maker	32.	Exercise & Fitness	85.
Claris MacPaint II	99.	Food	85.
MacDraw II	299.	Four Seasons	85.
Claris Cad	599.	NewsletterMaker	85.
Cricket Software Cricket Draw	167.	Nine to Five	85.
Cricket Paint	65.	People	85.
Cricket Graph	115.	ReportMaker	85.
Cricket Color Paint	179.	Team Sports	85.
Cricket Presents	285.	Travel	85.
Deneba Software Canvas 2.0		Weekend Sports	85.
(Includes Desk Accessory)	Special 169.	Micro: Maps MacAtlas Hyper Atlas	59.
Dream Maker		MacAtlas Professional	
MacGallery (Hypercard or Paint)	27.	(PICT/MacDraw Version)	105.
Cliptures (vol. 1 or vol. 2)	69.	Microsoft Microsoft PowerPoint 2.1	249.
Dubl-Click Software		Micro Spot MacInteriors	199.
World Class Fonts: Originals 1 & 2	42.	MacPlot Color Thermal	339.
World-Class Fonts: Stylish 3 & 4	42.	MacPlot DMA Electrostatic	1715.
World-Class Fonts: Giants 5 & 6	42.	MacPlot DMA Color Thermal	889.
World-Class Fonts: Triples 7 & 8	42.	MacPlot Electrostatic	685.
World-Class Lasertype: 1		MacPlot Pen Plotter Professional	275.
Aukland, Calais, Metropolitan	42.	MacPlot Pen Plotter Standard	135.
World-Class Lasertype: 2		Miles Computing	
Hoboken, Ixtapa, Saigon	42.	Mac the Ripper or Orchestra of Fonts	32.
World-Class Lasertype: 3 Versailles	42.	People, Places-Things or Taking	
World-Class Lasertype: 4		Care of Business	32.
El Paso, Tijuana	42.	Mindscape Zing	125.
World-Class Lasertype: 5 Hancock Park	42.	NuEquation Nu Paint	88.
World-Class Lasertype: 6		Paracom Swivel 3D	245.
Symbols Gabre, MathWhiz	42.	Model Shop	379.
World-Class Lasertype: 7 Frankfurt	42.	Silicon Beach Software SuperCard	128.
World-Class Lasertype: 8 Santa Monica	42.	SuperPaint 2.0	Special 128.
World-Class Lasertype: 9 Aspen	42.	Digital Darkroom	249.
WetPaint: Classic Clip Art (1 & 2)	42.	Super 3D 2.0	315.
WetPaint: Publishing (3 & 4)	42.	SoftStream HyperHIT	125.
WetPaint: Animal Kingdom (5 & 6)	42.	Solutions International	
WetPaint: Special Occasions (7 & 8)	42.	The Curator (Catalog Your Art)	72.
WetPaint: Printer's Helper (9 & 10)	42.	Springboard Certificate Maker	22.
WetPaint: Industrial Revolution (11 & 12)	42.	Springboard Publisher	109.
WetPaint: Old Earth Almanac (13 & 14)	42.	SuperMac Software	
WetPaint: Island Life (15 & 16)	42.	Pixel Paint Professional	Special 405.
WetPaint: All the People (17 & 18)	42.	Symmetry	
Electronic Arts Studio 8 (MacII)	299.	Picture Base & Wet Paint Bundle	79.
Studio 1	99.	Synergy KaleidaGraph	115.
Enabling Technology Clip 3D Accents	57.	Tactic Software Art Clip vol 2	69.
Clip 3D Business	57.	Art Clip or ArtFonts 1, 2 or 3	55.
Clip 3D Fonts	57.	Taylor Graphics FontLiner	79.
Clip 3D Geography	57.	TimeWorks Publish-It!	239.
Clip 3D Lifestyle	57.	T/Maker Christian Images	35.
Clip 3D Messages	57.	ClickArt EPS Illustrations or	
Clip 3D People	57.	EPS Business Art	74.
Clip 3D Recreation	57.	Zedcor DeskPaint 2.0	Special 65.



FAX: 203/381-9043
Inquiries: 203/378-3662
Canada: 1/800/344-7753
75 RESEARCH DRIVE
STRATFORD, CT 06497
1/800/832-3201

PROGRAMS PLUS



XCAL by Trendware

XCAL adds spreadsheet capabilities to HyperCard. Create formulas by clicking on fields and buttons in a transparent spreadsheet which displays over cards in a stack. **XCAL** recalculates formulas automatically when HyperCard objects are clicked or modified. Perform calculations across all cards of a background or just those matching a search criterion. Access advanced capabilities with the macro editor. \$89.

EDUCATIONAL/CREATIVE SOFTWARE

A Lasting Impression Resumexpert	49.	Great Wave Software KidsTime	26.
Ars Nova Practica Musica 2.1	73.	Number Maze	26.
Barron's Barron's SAT	35.	Crystal Paint	26.
Bogas Productions		Individual Typing Instructor Encore	26.
String Quartet, Country or Heavy Metal	14.	Learning Company	
Sound Effects	14.	Reader Rabbit	31.
Super Studio Session	69.	Math Rabbit	31.



Vantage by Preferred Publishers

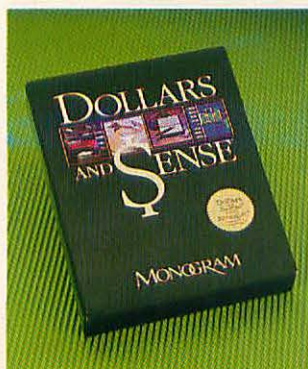
Vantage is a powerful, special purpose text processor designed to respond to both the specialized and the mundane word processing tasks. **Vantage** can convert a wide variety of different word processing formats including Word, MacWrite and Write Now. .. \$55.

Bright Star Technology

Alphabet Blocks	30.
Talking Tiles	69.
Broderbund Type!	19.
Sensei Geometry, Calculus or Physics	59.
Where in the World is Carmen SanDiego?	27.
Where in Europe is Carmen SanDiego?	30.
Where in the USA is Carmen SanDiego?	30.
Jam Sessions	30.
Coda Mac Drums	31.
Perceive	50.
Davidson & Associates Speed Reader II	27.
Math Blaster or Word Attack!	27.
Electronic Arts Mavis Beacon Typing	33.
Deluxe Music Construction Set V2.5	84.
First Byte	
Dinosaur Discovery Kit, Puzzle	
Storybook or Rhyming NoteBook	27.

Mindscape Perfect Score SAT

w/The Perfect College	32.
Nordic Body Works	28.
Clock Works	28.
Coin Works	28.
TurboMath Facts	28.
Earth Works	28.
Flash Works	28.
Lemonade Stand	28.
Naval Battle	28.
PreSchool Disk 1	28.
PreSchool Disk 2	28.
Word Search	28.
Primera Software	
Different Drummer	59.
Simon & Schuster Typing Tutor IV	30.
Springboard Top Honors	59.
Family Matters or Atlas Explorer	28.



Dollars & Sense 4.1C by Monogram Software

Dollars and Sense, the complete financial management program. Balance sheet? Chart of accounts? Customized reports? Other features: Automatic double entry accounting, check printing, "what if?" bill paying, and import/export to/from most popular spreadsheets. If you'd like to make a positive financial statement or just an assessment of your personal value - let **Dollars and Sense** take charge of your finances. \$81.

ACCESSORIES

Advanced Gravis		Printer Muffler 80	43.
MouseStick (Plus or ADB)	85.	System Saver Mac (Beige or Platinum)	64.
Cutting Edge		Space Saver Printer Stand	17.
Cutting Edge MCK-105QK		Super Base	34.
Keyboard w/Quickkeys	135.	System Saver SE	52.
DataDesk Hyper Dialer	24.	Masterpiece Mac II	105.
MAC-101 Keyboard/Beige		New Turbo Mouse (Reg. or ADB)	109.
(128k/512k & MacPlus)		Universal Copy Stand	22.
MAC-101 ADB Keyboard/Platinum		Universal Printer Stand	15.
(Mac SE & Mac II)		Apple Color Monitor or Full Page	
Ergotron Mousecleaner 360°	Special 139.	Display Polarizing Filter	65.
MacTilt (Mac, SE or II)	Special 68.	Two Page Display Polarizing Filter	135.
Muzzle SE	62.	Power Back 330	269.
Muzzle Mac II	69.	Lynx Computer	
Farallon MacRecorder Sound System		Turbo Trackball (Mac & Mac+ or	
(Mac SE or Mac II)	165.	Mac SE & Mac II)	Special 65.

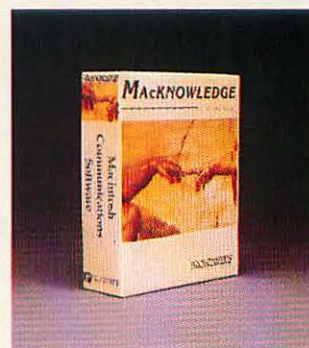


Cutting Edge 800K Drive by Cutting Edge

The **Cutting Edge 800K** floppy disk drive takes advantage of the newest technology to offer high speed, low noise, high reliability in a compact, stylish case. The **Cutting Edge 800K** floppy drive is compatible with all new ROM Macs including the Mac SE and Mac II. The **Cutting Edge 800K** would make an attractive addition to many Macs. \$149.

Goldstein & Blair

Macintosh Bible 2nd ed.	20.	MicroSeeds WristMac	149.
Impulse Audio Digitizer w/soundware	139.	WristMac Executive	199.
I/O Design		Mobius Fanny Mac QT	
Mac Luggage in Navy or Plat.		(Beige or Platinum)	60.
Macinware Plus Carrying Case	64.	Mouse Systems A+ Mouse (MacPlus)	63.
Macinware SE Carrying Case	75.	A+ ADB Mouse (Mac SE/Mac II)	83.
Macinware IICX Carrying Case	89.	Moustrak MousePad 7" x 9" Size	8.
Macinware II Carrying Case	99.	MousePad 9" x 11" Size	9.
Imageware II Carrying Case	49.	Orange Micro Grappler Spooler	39.
		Grappler C/Mac/GS or Alphabits	79.



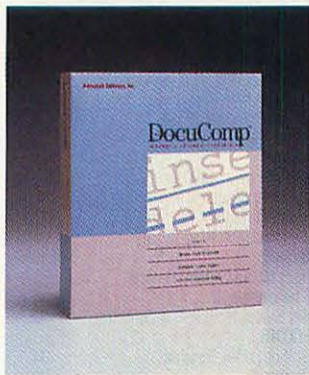
MACKNOWLEDGE by Prometheus

MACKNOWLEDGE is the latest communications software available for your Mac. Icon based scripts provide instant access to all major online services with just a click of your mouse. The TAL scripting language provides all the capabilities for customizing and automating your own online sessions or the record function will watch your session and create an icon based script automatically. \$125.

Kalmar Designs

Teakwood Roll-Top Disk Cases:		Grappler L/Q or Grappler L/S	103.
Micro Cabinet (holds 45 disks)	14.	Ribbons	
Double Micro Cabinet (holds 90 disks)	21.	Available in Black, Blue, Brown,	
Triple Micro Cabinet (holds 135 disks)	31.	Green, Orange, Purple, Red,	
Kensington		Yellow, Silver & Gold	
Mouseway (Mousepad)	8.	ImageWriter Ribbon	4.
ImageWriter or ImageWriter II Cover	9.	ImageWriter Black 6-pack	20.
Macintosh Plus/SE Dust Cover	9.	ImageWriter Rainbow Pack	
Apple Security Kit	34.	(6 Colors)	20.
Antiglare Polarizing Filter	33.	ImageWriter II-Four Color Ribbon	9.
Mac II Stand and Cable Kit	65.	ImageWriter LQ Black	17.
Mac II Monitor Stand	65.	ImageWriter LQ Four Color	20.
Power Tree Surge Suppressors		Seikosha Ribbon Black	6.
(10, 20, or 50)		Targus ImageWriter II Carry Case Blk.	49.
Printer Muffler Stand (80 & 132)		Macintosh Plus Carry Case Blk.	59.
		Deluxe MacPlus-XKB Blk.	75.

30 DAY MONEY-BACK GUARANTEE ON SELECTED PRODUCTS



DocuComp by Advanced Software

DocuComp compares different versions of a word processing file or programmer's code. Frustrated with marking up hard copy? No More! **DocuComp** reports changes as minor as added commas or as major as a complete rearrangement and lists all changes by page and line number. **DocuComp** is being adopted as a standard in Fortune 500, government, writing, legal and academic circles. **\$89.**

PRINTERS & DIGITIZERS

Digital Vision		Cordless 4 Button Cursor	65.
Computer Eyes-Mac	209.	LogiTech ScanMan	349.
Koala Technologies Corp.		Seikosha	
MacVision 2.0 (Digitizer)	219.	SP1000 (Imagewriter comp.)	235.
Mac Director	109.	Summagraphics	
Kurta		Bit Pad Plus	325.
IS ADB Tablet 8½x11	255.	ThunderWare ThunderScan	189.
IS ADB Tablet 12x12	385.	LightningScan	Special 409.
IS ADB Tablet 12x17	625.	Mac II Power Accessory	42.



SHOWCASE F/X by Aegis

Aegis' **SHOWCASE F/X** is the feature packed special effects and animation system for fonts and graphics. Enhance your graphic images with powerful, unique headlines by applying styles to any Macintosh font. Distort, rotate and rescale graphic images and fonts. Create animated text, and play it back at 60 frames per second! For high impact presentations and desktop video, you can't beat Aegis' **SHOWCASE F/X**. **\$189.**

SPELLING & GRAMMAR CHECKERS

Aegis Development		Microlytics, Inc.	
Doug Clapp's Word Tools 2nd Edition	42.	Word Finder (Synonym Finder)	36.
Deneba Software Big Thesaurus	59.	Electronic Word Finder	Special 59.
Spelling Coach 3.0		Sensible Software	
Professional	Special 115.	Sensible Grammar or BookEnds	53.
Electronic Arts Thunder! II	52.	Working Software	
Lundeen & Associates WorksPlus Spell	46.	Spellswell 2.0	45.

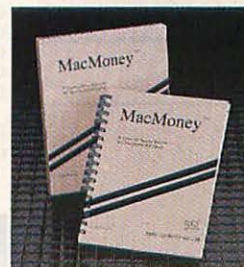


Nisus by Paragon Concepts

With **Nisus**, word processing comes of age. Only **Nisus** has unlimited undos, graphics within text, recordable macros, Easy Grep, effortless indexing, footnotes/endnotes, hyphenation, 10 clipboards, automatic repagination, on-screen/printing line numbers, intelligent spell checking, plus all the search and replace power of QUED /M. And it's not just for super-users — **Nisus** needs only a Mac Plus or larger. **\$259.**

UTILITY SOFTWARE

Abbott Systems, Inc.		Loop Software PictureBook	40.
CanOpener	65.	Lundeen & Assoc.	
ALSoft Master Juggler	64.	WorksPlus Command	85.
MultiDisk	49.	Magic Software Auto Save II	28.
Disk Express	49.	POWERCONS	39.
Font/DA Juggler Plus	42.	POWERmenus	39.
A.S.D. FileGuard	129.	MainStay AntiToxin or ClickPaste	59.
Berkeley System Design After Dark	25.	Microlytics, Inc.	
Stepping Out II	50.	GOFer	Special 47.
Beyond Inc. Menu Fonts 2	28.	Microseeds INITPicker	27.
Borland Sidekick 2.0	68.	Redux	52.
Bravo SPAMM	49.	ScreenGems	42.
Central Point Software		Olduvai Software MultiClip	51.
Copy II Mac (Includes MacTools)	24.	Read-It! O.C.R. Personal	99.
PC Tools Deluxe Mac	45.	Read-It! O.C.R. 2.1	245.



MacMoney 3.0 by Survivor Software

MacMoney is the user-friendly money management program for the Mac at home or in business. **MacMoney** features easy point and click transaction entry. Let **MacMoney** help you solve your cash management problems today. **\$59.**

CE Software		PCPC HFS Back-Up 3.0	54.
QuickKeys (Macro Program)	65.	Peripheral Land TurboOptimizer	25.
MockPackage Plus Utilities	32.	TurboBack	49.
Dantz Software Development		TurboCache	59.
Retrospect	155.	TurboSpool	59.
Dubl-Click		SuperMac Software SuperSpool 5.0	59.
Calculator Construction Set v2.0	55.	SuperLaserSpool 2.0	89.
Electronic Arts Disk Tools Plus	31.	DiskIt 1.5	Special 59.
Farallon Computing		Sentinel 2.0	89.
Screen Recorder	129.	Symantec MacSQZ!	52.
Fifth Generation Systems Suitcase II	45.	Symantec Utilities for Mac (S.U.M.)	63.
FastBack II	108.	Symantec AntiVirus for Mac (S.A.M.)	63.
Power Station	35.	Tactic Software Icon-It!	39.
Pyr!	15.	TENpointO	
HJC Virex	55.	OpenIT!	49.
Icom Simulations On Cue	35.	Williams & Macias DiskFinder	27.
Ideafarm		myDiskLabeler w/Color	29.
MacLabeler Plus	42.	myDiskLabeler	
Insight Development MacPrint	79.	w/LaserWriter Option	34.
Kent Marsh QuickLock	57.	SlickyBusiness	89.
MacSafe or KnightWatch	87.	XTree Company XTree	52.



Rags to Riches '3-Packs' by Chang Labs

Rags to Riches '3-Packs' offers the user flexible reporting, batch totals for any time period, user definable accounting cycles and impressive speed. As a special bonus, if you choose a '3-Pack' before June 30, **Programs Plus** will send you an Aatrix Payroll program, absolutely FREE! **General 3-Pack** (G/L, A/R, A/P) (**\$285**), **Pro 3-Pack** (G/L, Pro. Bill, A/P) (**\$355**), **Retail 3-Pack** (G/L, Invent., A/P) (**\$355**).

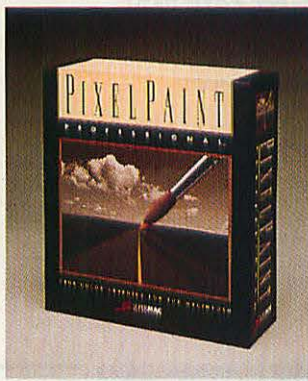


FAX: 203/381-9043
Inquiries: 203/378-3662
Canada: 1/800/344-7753
75 RESEARCH DRIVE
STRATFORD, CT 06497
1/800/832-3201

PROGRAMS PLUS

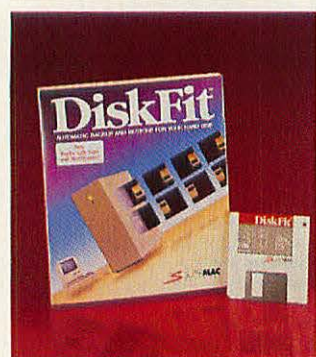
PixelPaint Professional by SuperMac Software

PixelPaint Professional is the first "true-color" paint program for the Mac. It is designed to grow with you — from 8-bit to 32-bit systems. From general painting to advanced design. **PixelPaint Professional** gives you the intuitive tools to do your work easily. Use powerful features like advanced masking, fill effects, dithering, anti-aliasing and transparency control for advanced graphics effects and photographic-quality images. \$405.



DATABASE MANAGEMENT

Acus 4th Dimension	349.	MBA Massmail	115.
4th Dimension Runtime	229.	MBA Netmail	115.
Activision		MBA Personnel	115.
Reports for Hypercard	65.	MBA Projects	115.
Focal Point & Business Class Bundle	49.	MBA Ship rec.	115.
Apple Computer HyperCard	42.	MBA Telesell	115.
Blyth Software Omnis 5	Special 359.	MBA Travelog	115.



DiskFit 1.5 by SuperMac Software

Now there is no excuse for not protecting the information on your hard disk! Quickly and automatically, **DiskFit** performs an incremental back-up of your hard drive onto standard or high-density floppies, cartridges, tape or other hard drives. Allows you to select the type of files for back-up and finder-readable storage format lets you copy single files from the back-up media in the Finder. \$59.

Borland Rellex Plus	185.	Icom Simulations	
Claris		Formulator	89.
FileMaker II	229.	Microsoft Microsoft File 2.0	125.
Exodus Retriever	59.	Microsoft Office (includes Excel, Word, PowerPoint & Mail)	499.
Fox Software FoxBase+ V2.0	255.	Odesta Double Helix II	339.
FoxBase+ Multi-User V2.0	355.	DataDesk Professional	Special 285
FoxBase+ Runtime V2.0	155.	GeoQuery	199.
Generation Four		Preferred Publishers	
Multiuser Business Administration Series:		DALabase	Special 69.
MBA Clients	115.	ProVUE Panorama	205.
MBA DistList	115.	Software Discoveries	
MBA Docutrak	115.	RecordHolderPlus	65.
MBA Inventory	115.		

LightningScan by Thunderware

LightningScan is a hand-held, high resolution image scanner for the Macintosh. Its design allows for fast scanning of photographs, images from books and magazines, drawings, and logos. Its speed and flexibility make it an ideal tool for all Macintosh graphic applications including desktop publishing and design. After use, the scanning unit is easily stored in any desk drawer. \$409.



ENTERTAINMENT SOFTWARE

Access		Microsoft	
World Class Leader Board Golf	27.	Flight Simulator 1.02	32.
Accolade		Miles Computing Inc.	
Hard Ball or Mean 18	27.	Harrier Strike Mission II or	
4th & Inches	27.	The Fool's Errand	32.
Cosmic Osmo	35.	Puzzle Gallery	27.
Activision		Might and Magic	36.
Universal Military Simulator		Mindscape	
or Manhole	30.	Balance of Power 1990 or	
Manhole CD ROM	35.	Crossword Magic	30.
Broderbund		Deja Vu or Deja Vu II	30.
Ancient Art of War or At Sea	27.	King Of Chicago, Shadowgate	
ShufflePuck Cafe	24.	or Siboot	30.
SimCity	29.	Defender of the Crown, Colony	
Bullseye Software		or The Uninvited	30.
Fokker Triplane Flight Simulator	29.	Captain Blood, Hostage or Gauntlet	30.
P51 Mustang or Ferrari Grand Prix	32.	PCAI (XOR)	
Casady & Greene, Inc.		MacGolf or Lunar Rescue	34.
Crystal Quest	25.	MacCourses	20.
Crystal Quest w/Critter Editor	41.	Road Racer	39.
Centron		Mac Golf Classics	53.
Crapsmaster, Roulette Master		Premier Technology	
or Blackjack Ace	27.	Strategic Conquest Plus 2.0	35.
Pokemaster or Baccaratmaster	27.	Net Trek	35.
Casino Master	49.	Primera	
Casino Master (Mac II)	Special 55.	Smash Hit Racquetball II	18.



atOnce! by Layered Inc.

atOnce! is the next generation in high-speed small business accounting. Included in one seamlessly integrated module are four full featured applications: General Ledger, Accounts Receivable w/Billing, Accounts Payable & Payroll. \$289.

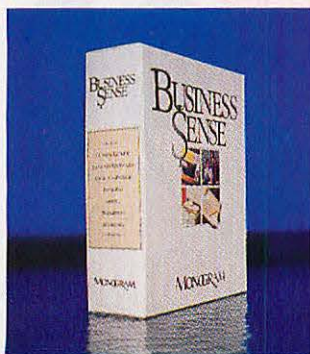
Data East		Sierra On-Line	
Super Hang On	27.	Space Quest or Space Quest II	29.
DataSoft		Leisure Suit Larry, Silpheed	
Time & Magic	29.	or Gold Rush	23.
Hunt for Red October	32.	Police Quest or ManHunter	29.
Discovery Software		King's Quest I, II or III	29.
Arkanoid	27.	Silicon Beach Software	
Electronic Arts		Airborne or Enchanted Scepters	21.
ChessMaster 2100 or Bards Tale	32.	Dark Castle or Apache Strike	32.
Chuck Yeager Flight Simulator		Beyond Dark Castle	32.
or Life & Death	32.	Sir-Tech	
Starfleet I	36.	Mac Wizardry	35.
One-On-One, Pinball Construction Set,		SoftStream, Inc.	
Seven Cities of Gold, SkyFox, or		Colour Billiards	35.
Patton vs Rommel	15.	Mac Man or Solitaire DA	23.



Omnis 5 by Blyth Software

Omnis 5 is a comprehensive program for developing business data management applications. It is a multiuser, multi-platform database management system for the Macintosh and IBM compatible personal computers. \$359.

EPYX		Sphere, Inc.	
Sub Battle Simulator (Mac or MacII)	29.	Tetris	19.
Hayden Software		Tetris (Mac II)	24.
Sargon IV	29.	GATO, Orbiter or PI-109	26.
Hyper Press		Solitaire Royale (SE or II)	19.
Silver Screen	40.	Falcon 2.0	31.
Infocom		Springboard	
Leather Goddesses of Phobos	15.	Hidden Agenda	36.
Beyond Zork or HitchHiker's Guide	15.	SubLogic	
Zork Trilogy or QuaterStaff	30.	Jet	32.
Zork Zero	35.	Toyogo, Inc.	
Arthur or Journey	30.	Go Master	49.
MicroProse Pirates	32.	Joseki Tutor	30.



Business Sense by Monogram

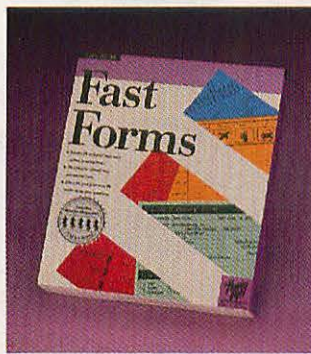
Business Sense is serious business software for the small to medium size business. It's easy to use and hard to outgrow. General Ledger, Accounts Receivable, Accounts Payable, Payroll, Invoicing and Budgeting functions are fully integrated in one powerful package. All this power is easy to use. If your business has what it takes, **Business Sense** from Monogram can take you all the way. **\$269.**

ACCOUNTING PACKAGES

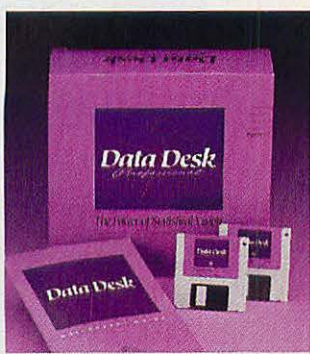
Aatrix Software Aatrix TimeMinder	149.	Dac Software Dac-Easy Light	42.
Aatrix Payroll Plus	149.	Dow Jones Market Manager PLUS	189.
Aatrix Checkwriter v2.0	35.	Intuit Quicken V1.5	39.
Aatrix TimeCard	69.	Layred Insight One Write	125.
Aatrix Payroll v3.5	95.	At Once!	Special 289.
Brown-Wagn MacLedgers	155.	Insight Expert INV or	Special 409.
Service Industry Accounting	205.	Time Billing	
Chang Labs Rags to Riches Professional 3 pack	Special 355.	Insight Expert GL, AR, AP or Payroll	Special 409.

Fast Forms by Power Up

Fast Forms is a powerful forms management system that lets you quickly create, customize, fill and print professional quality custom business forms. With **Fast Forms** you can fill in your forms from within the application, or use the desk accessory that it comes with to quickly access, fill in and print your forms. **Fast Forms** also includes 30 ready to use form designs to help you get started quickly. **\$89.**

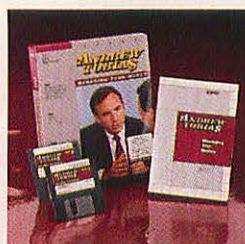


Rags to Riches Retail Business 3 pack	Special 355.	MECA Managing Your Money	Special 125.
Rags to Riches Gen. 3-Pak 3.1 (GL/AR/AP)	Special 285.	Monogram Business Sense	Special 269.
Rags to Riches Inventory Control	235.	Dollars & Sense 4.1c	Special 81.
Rags to Riches Professional Billing	235.	Niles & Associates Grant Manager	249.
Rags to Riches GL, AR, or AP	118.	Peachtree Back To Basics Professional (GL/AR/AP/INV)	155.
Check Mark MultiLedger Payroll	259.	Satori Software Components GL	369.
Cash Ledger	129.	Survivor Software MacMoney 3.0 (Enhanced Ver.)	Special 59.
Computer Associates Simply Accounting	199.		



DataDesk Professional by Odesta

DataDesk Professional is the data analysis package that lets you see, explore and understand the meaning of your information. Even if you're not a computer wizard, you can use **DataDesk Professional's** icon-based point and click user interface to generate histograms, bar charts, scatter plots, box plots and rotating plots. Let **DataDesk** bring the power of statistical vision to your Macintosh. **\$285.**



Managing Your Money by MECA

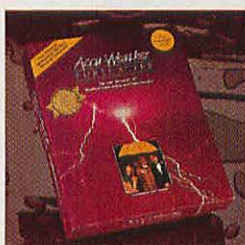
With **Managing Your Money**, you can write, print checks, set up a personal budget, estimate your taxes, set up a retirement plan, manage an investment portfolio, and calculate your net worth. **\$125.**

COMMUNICATION SOFTWARE

Compuserve Compuserve Starter Kit	24.	Insigna SoftPC	245.
Compuserve Navigator	45.	Prometheus MacKNOWLEDGE	Special 125.
DataViz MacLink Plus/Translator	105.	Meta Comet Accu-Weather Forecaster	Special 58.
MacLink Plus with Cable	125.	Software Ventures Microphone II v3.0	219.
Dow Jones News/Retrieval Membership Pack	24.	Solutions, International BackFax	125.
Desktop Express	95.	Synergy Software VersaTerm	89.
Freesoft Red Ryder V10.3	52.	VersaTerm-Pro	175.
Hayes Smartcom II 3.1	88.	Traveling Software LAP-LINK	82.
Infosphere Liaison	175.		

ADOBE FONTS

#1 Palatino	125.	#33 Stencil, Hobo, Brush	95.	#65 Peignot	95.
#2 ITC Bookman	125.	#34 Aachen/Revue/Univ	125.	#66 New Calendonia	239.
#3 ITC Zaph Chancery	95.	#35 Carta	63.	#67 ITC Clearface	239.
#4 ITC Avant Garde	125.	#36 Lucida	129.	#68 Americana	125.
#5 New Century Sch/Bk	125.	#37 Univers	239.	#69 ITC Serif Gothic	179.
#6 Optima	125.	#38 Univers Condensed	179.	#70 Century Expanded	95.
#7 ITC Souvenir	125.	#39 Futura 1	179.	#71 Serifa	179.
#8 ITC Lubalin Graph	125.	#40 Stone Serif	179.	#72 Caslon Open Face	63.
#9 ITC Garamond	125.	#41 Stone Sans	179.	#73 Frutiger	239.
#10 ITC American Type	95.	#42 Stone Informal	179.	#74 Centennial	239.
#11 ITC Benguiat	125.	#43 Corona	95.	#75 Stempel Garamond	125.
#12 Glypha	125.	#44 Eurostile	179.	#76 Weis	125.
#13 Helvetica Light/BI	125.	#45 Excelsior	95.	#77 Garamond 3	125.
#14 Helvetica Condensed	239.	#46 Futura 2	179.	#78 Universal News w/Commercial Pi	95.
#15 Trump Mediaeval	125.	#47 Futura Condensed	239.	#79 Avenir 1	179.
#16 Melior	125.	#48 Lucida Sans	125.	#80 Avenir 2	179.
#17 ITC Galliard	125.	#49 Memphis	239.	#81 Bauhaus	125.
#18 ITC New Baskerville	125.	#50 Helvetica Compress	95.	#82 Antique Olive	125.
#19 ITC Korinna	125.	#51 Italia	95.	#83 Life	95.
#20 Goudy Old Style	125.	#52 Belve	125.	#84 Concord	125.
#21 Sonata	63.	#53 Caslon	125.	#85 Gothic 13/Tempo	95.
#22 Century Old Style	95.	#54 Goudy 2	95.	#86 Cochlin	125.
#23 ITC Franklin Gothic	179.	#55 Janson Text	125.	#87 ITC Bauhaus	125.
#24 ITC Cheltenham	125.	#56 Eras	179.	#88 Sabon	125.
#25 Park Avenue	63.	#57 ITC Kabel	125.	#89 Hiroshige	239.
#26 Bodoni	125.	#58 OCR A&B, Micr	95.	#90 Arnold Bocklin	125.
#27 Letter Gothic	125.	#59 Helvetica 1	125.	#91 Dom Casual	95.
#28 Pristige Elite	125.	#60 Helvetica 2	179.	#92 Post Antiqua	95.
#29 Orator	95.	#61 Helvetica 3	179.	#93 Folio	125.
#30 News Gothic	125.	#62 Times Ten	125.	#94 Linoscript	95.
#31 ITC Tiffany	179.	#63 Kaufmann	95.	#95 Vag Rounded	125.
#32 Cooper Black	95.	#64 Clarendon	95.		



Accu-Weather Forecaster by Meta Comet

Accu-Weather Forecaster gives you up-to-the-minute weather maps, graphs and forecasts. Uses a modem to tap directly into Accu-Weather, the nation's #1 private weather service. **\$58.**



FAX: 203/381-9043
Inquiries: 203/378-3662
Canada: 1/800/344-7753
75 RESEARCH DRIVE
STRATFORD, CT 06497
1/800/832-3201

THE FIRST GRAPHIC SPREADSHEET.
THE LARGEST, FASTEST AND MOST VERSATILE SPREADSHEET EVER.

WINGZ™

“If you use Excel, you'll be up and running with the \$399 Wingz almost immediately—the learning curve is not an obstacle to upgrading to it.”

“You get total control over visual elements of the spreadsheet...it produces graphs that are nothing short of awesome.”

—Newsday

“Wingz has more features than any Macintosh or DOS spreadsheet on the market, but is easy to use and learn.”

—MacGuide

“Wingz towers over Excel.”

“Wingz is fast. Faster than Excel or Full Impact in recalculation speed as well as in opening and saving files.”

“The most extensive graphing capability of any current Mac program.”

—MacWeek

INGRAM MICRO D
BEST SELLERS LIST
MAY 1989
based on actual units shipped
APPLE/MACINTOSH PRODUCTS
BUSINESS
WINGZ • INFORMIX • (MAC)

“The most exciting piece of software I've ever used on the Macintosh...Wingz opens up virtually the whole of the Macintosh box of tricks.”

“Wingz is as significant in its own way as MacPaint and HyperCard.”

—MacUser U.K.

“Philip Welt, group product manager for Microsoft's analysis business unit, conceded that the newest upgrade to Mac Excel is partly the result of competitive pressures coming from Informix. 'Wingz has focused on output and graphics. They've hit us in a place where we haven't moved our product ahead.'”

—Computerworld

“Wingz is a nice replacement for Excel.”
“Go for the gold and purchase Wingz.”

—InfoWorld

MACUSER RATING
WINGZ ★★★★★

Available now for Apple® Macintosh® computers.

TO FIND A WINGZ DEALER NEAR YOU CALL (800) 331-1763, EXT. 1000

INFORMATION MANAGEMENT SOFTWARE FROM INFORMIX®

Copyright © 1989 Informix Software, Inc. Informix and HyperScript are registered trademarks and Wingz is a trademark of Informix Software, Inc. Apple, Macintosh, MacPaint and HyperCard are registered trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. Full Impact is a trademark of Ashton-Tate Corporation.

Circle 390 on reader service card



NEW PRODUCTS

Edited by
Mary Margaret Lewis

This section covers Macintosh products formally announced but not yet evaluated by Macworld. All prices are suggested retail. Please call vendors for information on availability.

HARDWARE

Aligne UPS Systems

Online UPS systems for Mac Plus, SE, and II that turn on and off automatically with the Mac. Backs up CPU, monitor, and one additional piece of hardware. Convection-cooled; matches footprint of the computer. Aligne SE \$440; Aligne Plus \$460; Aligne II \$1100. American Lotus Technologie, 404/284-1828.



Aligne UPS Systems

Apple FDHD External Drive

External 1.4MB drive for Mac IIfx and SE/30 takes advantage of the FDHD's ability to format, read, and write Mac 400K, 800K, and 1.4MB disks—in addition to MS-DOS, OS/2, and 800K ProDOS disks—

using Apple File Exchange 1.1 or greater. \$629. Apple Computer, 408/996-1010.

Baytec 2000

Computer network that integrates Macs and workstations with mainframes and mini-computers, LANs, and other networks. Uses SCSI interface for data-transfer rate of up to 200 megabits per second. Conforms to ISO/OSI model. \$16,996 for 56-node base unit, which includes file server, print and plotter spooler, and network interface. Baytec, 313/427-1250.



Complete Page Scanner

The Complete Page Scanner, The Complete Half-Page Scanner/400

The Complete Page Scanner is a 200/300-dpi sheetfed scanner that scans images up to 8½ by 14 inches in less than 30 seconds. The Complete Half-Page Scanner/400 scans images up to 4 by 14 inches at 200 dpi, 300 dpi, or 400 dpi. Both units simulate 16 levels of gray. \$499. The Complete PC, 408/434-0145.

FaxPro

Combines the functions of a 9600-bps facsimile modem

with a 2400-bps Hayes-compatible intelligent modem. Features include background operation with MultiFinder, delayed transmission, and multidestination sending. Communications software bundled. \$995. Cypress Research, 212/475-7782.



Genesis 6000

Genesis 6000

600MB erasable optical disk drive designed for applications with large-capacity storage needs. Automatically manages bad blocks and formats disk cartridges. Uses 5¼-inch removable cartridges. \$4995. Macsetra Technologies, 306/934-6044.

Heart Data Drives

Series of 13 hard disks for the Mac including 4 high-capacity internal hard disks for the Mac II/IIfx. \$1035 to \$4795. Heart Data Corporation, 818/998-1691.

Jasmine DirectDigital Tape Drive

Digital audiotape drive with 1.2 gigabyte capacity. Can locate data anywhere on the tape within 40 seconds. Uses 4mm tape cassettes. \$6995.

Jasmine Technologies, 415/282-1111.

M300 Floppy Disk Drive

External 3½-inch 800K floppy disk drive. Has a microprocessor-controlled, variable-speed, spindle motor and optional software-controlled automatic disk ejection. Without push-button eject \$229; with push-button eject \$249. SystemGate, 818/282-4720.

NB-PRL Plug-in Board

Plug-in interface board for the Mac II that lets documents written in Mac word processing programs be printed on Centronics-compatible printers and plotters. \$245. National Instruments, 512/250-9119.



ParaLink

ParaLink

Printer cable that houses both a serial-to-parallel converter and a high-speed buffer. Comes with software drivers for all printers. \$129. Jonathan Freeman Technologies, 415/822-8451.

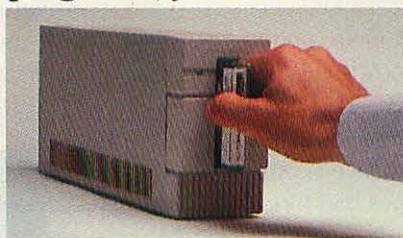
Photolink

Product that uses infrared light as a medium for connecting Macintosh computers (continues)

How to avoid making backups.

Make Irwin® do it.

An Irwin tape backup system, that is. So go home early. Because an Irwin system will back up your data, your programs, your breakthrough ideas—all automatically.



No complicated commands.

No sloppy floppies.

Our EzTape® software makes it easy to store whatever data you want. Whenever you want.

It doesn't matter whether you're backing up a Macintosh® or a PC.

An Irwin backup system works with them all. Along with all the popular local area networks. Providing up to 150 megabytes of reliable storage.

In fact, with its patented AccuTrak® precision tracking technology, you can transfer data from a Mac to a PS/2® to a PC and back again. Something that would throw a floppy right off its track.

All in all, that's why more people rely on Irwin mini-cartridge systems to do their backup than all others combined.

Just call 1-800-BACKUP1 for the dealer nearest you. Because the best way to make backups is to avoid it.

IRWIN®
A Cipher Products Group

©Copyright 1989, Irwin Magnetic Systems, a subsidiary of Cipher Data Products, Inc. 2101 Commonwealth Blvd., Ann Arbor, MI 48105. Irwin, EzTape and AccuTrak are registered trademarks of Irwin Magnetic Systems, Inc. PS/2 is a registered trademark of International Business Machines Corporation and Macintosh is a registered trademark of Apple Computer, Inc.

Circle 471 on reader service card

Few things last as long as information on BASF.

Your information couldn't be safer carved in stone. At BASF, we mold the rigid plastic jacket of our 3.5" Micro Diskette to our own specifications for unsurpassed protection. And our clipping level is 44% higher than industry standards. And here's an offer that won't last long at all. Get a free nylon travel wallet, including a free



Try it. Depend on it.

offer. Hurry, supplies are limited.

preformatted BASF 3.5" Micro Diskette, just by calling 800-346-6552, between 9AM and 5PM, EDT. Ask for the BASF Diskette

BASF Corporation

Crosby Drive, Bedford, MA 01730

BASF



Information Systems

Circle 479 on reader service card

AMIE is the newest addition to our family.

Air Land Systems' Apple Macintosh Interface Emulator lets you connect the Macintosh to your Unisys/Sperry host.

Now you can have the tremendous capabilities of the Macintosh running on your Uniscope network with AMIE, the newest member of Air Land Systems' family of interface emulators. AMIE is a hardware/software package that emulates the UTS 20, 30, 40, or SVT 1120 terminals, allowing the features of the Mac to be retained and interactively used in the Unisys environment. ■ AMIE supports various forms of connectivity and handles the communication line protocol. The software emulator is fully compatible with a Sperry terminal and includes a multitude of features, such as file saving and printing, color capability, menu selections, help screens, and cut/copy/paste to and from other applications. ■ Models are available for the Macintosh II or IIcx, SE, and SE/30. For more information on sales and service for this product, contact Air Land Systems.



AIR LAND SYSTEMS

2710 Prosperity Avenue, Fairfax, Virginia 22031-4387
(703) 573-1100; FAX (703) 573-0121; TWX 710-833-1174 AIRLAND FRAX

Circle 1 on reader service card



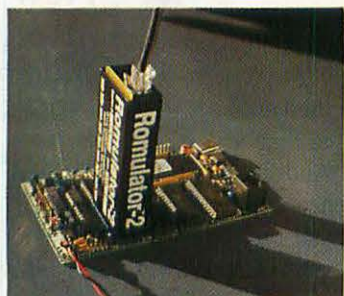
and peripherals within a local area network. User-installable and portable. Attaches to office partition. \$995. Photonics, 408/370-3033.



Photolink

Pow-R-Lok

Keylock device controls access to computers, hard disks, printers, and peripherals by preventing power-up without the appropriate key. \$69.95. Mac Products, 714/595-4838.



Romulator-2

Romulator-2

EPROM emulator that can be used to develop programs for any processor for which you have an assembler. Miniature surface-mount design reduces connection distance and eliminates interline capacitance and cross talk. \$295 and up. Onset Computer, 508/563-9000.

RX7100PS PostScript Printer

PostScript-compatible printer runs with both Macs and IBM-compatible PCs. Comes with 35 fonts, dual paper trays, and the ability to emulate several industry-standard interfaces. \$4495. Fujitsu America, 408/432-1300.

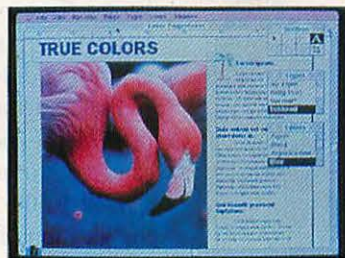
XY600RW Optical Laser Drive

High-density optical laser drive compatible with Mac SE and all later Mac models. Drive is accessed via standard SCSI interface and uses 5 1/4-inch industry-standard ISO format disks, each of which stores up to 600MB of information. \$4995. Xyxis, 612/944-9011.

SOFTWARE

Aldus PageMaker Color Extension

Software adds color capabilities to Aldus PageMaker. Lets you add color text and PageMaker-drawn graphics, and import color illustrations saved as encapsulated PostScript files. Supports full palette of Pantone colors. \$195. Aldus, 206/622-5500.



Aldus PageMaker Color Extension

AppMaker

Programmer's tool designed to cut development time by automatically programming the user interface (menus, windows, dialogs, and alerts). Developer points and clicks (continues)

Now you can back up without slowing down.

Protect the invaluable work on your hard disk. In just minutes each day. With our DiskFit™ backup and restore program. So in the event of a crash, you can restore all your work. Quickly and easily.

No other backup program works as efficiently. A single backup makes a complete record of your files. Then, only new or modified files are copied. Old versions are deleted. So you won't waste space storing outdated versions.

Or time, re-copying files.

And, files are backed up in Finder-readable format, so you can access them directly off a wide range of backup media. Floppies, tape, cartridges, other hard disks. Even the new Apple®FDHD™ high-density floppy drives.

Also available—Network DiskFit™. To back up AppleShare® and TOPS® networks. See DiskFit and Network DiskFit now, at your SuperMac™ software reseller.



The first. And still champion.



485 Potrero Avenue • Sunnyvale, CA 94086
408 • 245 • 2202 (Dept. 300)

© 1989 SuperMac Technology. SuperMac, DiskFit and Network DiskFit are trademarks of SuperMac Technology. Apple and AppleShare are registered trademarks, and FDHD is a trademark of Apple Computer, Inc. All other brands and product names are trademarks of their respective holders.

Circle 382 on reader service card

Work in harmony with your printer.

SuperLaserSpool™—our best-selling printing control software—lets you work and print at the same time. Automatically. Regardless of how long or detailed your documents. Or how many.

SuperLaserSpool lets you send multiple jobs to the printer. Reassign the order in which they'll print. And determine if jobs have printed. You can even preview jobs. And zoom in on any part of a page for a close-up view.

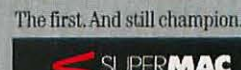
SuperLaserSpool is the industry standard. No other

spooler offers so many control features. Works faster. Or more easily.

SuperLaserSpool works with virtually all Macintosh® software, including PageMaker. And it supports all Apple® compatible printers.

Plus there's the new SuperLaserSpool Five-Pack. And SuperSpool™, exclusively for ImageWriter® printers.

Whichever you choose, you'll see a big jump in your productivity. See them now at your SuperMac™ software reseller.



485 Potrero Avenue • Sunnyvale, CA 94086
408 • 245 • 2202 (Dept. 300)

© 1989 SuperMac Technology. SuperMac, SuperLaserSpool and SuperSpool are trademarks of SuperMac Technology. Apple, Macintosh and ImageWriter are registered trademarks of Apple Computer, Inc. All other brands and product names are trademarks of their respective holders.

Circle 350 on reader service card

Qume CrystalPrint Publisher™

So Fast, Your Imagination Will Soar.

The Publisher desktop printer is fast. Blazing fast. Faster than any other page printer in its class. That means your best, your most complex PostScript® documents are in your hands in seconds. Not minutes.

Your imagination isn't kept waiting or wanting. Because the Publisher delivers eye-dazzling, laser-crisp print from your PostScript applications. With graphics composed of fine lines, solid blacks and smoothly graduated grays. And layouts with precisely formed text. The result — elegant images not even Apple®'s top-of-the-line LaserWriter™ II_{NTX} can match.

The Publisher's price will capture your imagination, too. It's amazingly low. You get the power of the LaserWriter II_{NTX} for less than a LaserWriter II_{NT}. And that's a very big difference.

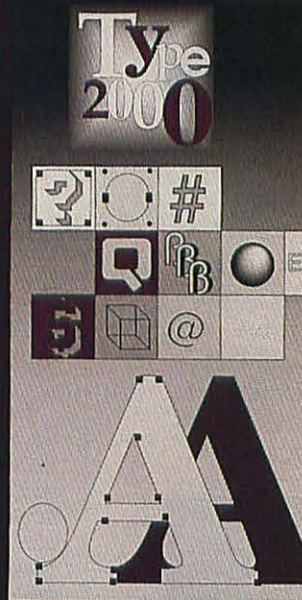
Plus, whether your preference is for Macintosh™ or IBM™ — no matter. CrystalPrint Publisher will send you to new heights in either world.

Call 1-800-223-2479 for more information, or the location of the Qume dealer nearest you. Don't wait. Let your imagination soar. See the Qume CrystalPrint Publisher today.



**"Best
New
Output
Device"**

1989 MacUser
Magazine
Editor's Choice
Award



Qume®

The Company with Peripheral Vision.

©Qume Corporation, 1989. Qume and the Qume logo are registered trademarks of Qume Corporation. CrystalPrint Publisher is a trademark of Qume Corporation. Apple is a registered trademark and LaserWriter and Macintosh are trademarks of Apple Computer, Inc. IBM is a trademark of International Business Machines Corp. PostScript is a registered trademark of Adobe Systems, Inc.

**Dealers circle 115 on reader service card
End users circle 353 on reader service card**

to arrange elements of the user interface on the screen and AppMaker generates the source code. \$295. Bowers Development, 617/259-8428, 800/245-8999.

atOnce

Integrated accounting application for small businesses. Contains modules for General Ledger, Accounts Receivable, Accounts Payable, and Payroll. Handles up to 20 user-defined journals and multiple companies. Allows transactions of up to \$99 million. \$395. Layered, 617/242-7700.



atOnce

Computerized Classic Bookkeeping: Job Costing and Budgeting Control

Software for small- to medium-size businesses to do job costing and budgeting written in spreadsheet format. \$199. Absolute Solutions, 800/458-3399, 800/633-7666 outside California.

The Crack of Doom

Final chapter of four-part series that takes J. R. R. Tolkien fans on a journey through Middle-Earth that is populated by deadly spiders, evil trolls, and grinning orcs. Based on Book VI of *The Return of the King*, by J. R. R. Tolkien. \$39.95. Addison-Wesley, 617/944-3700.

DavkaGraphics EPS: Jewish Holidays

Collection of Judaic clip art in encapsulated PostScript format, created with Adobe Illustrator. Encompasses a variety of Jewish holiday symbols and scenes. \$79.95. Davka Corporation, 800/621-8227.

DB/Write

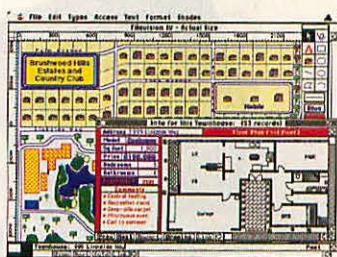
Word processor that can be seamlessly integrated into any new or existing 4th Dimension applications. Lets users merge data from any field or variable into the database. Includes features similar to those in MacWrite version 4.5. \$179. Metropolis Software, 415/322-2001.

Ed-U-Games

HyperCard-based teaching software designed to create object-oriented games out of educational materials. \$69.95. Solar Systems Software, 415/952-2375.

Filevision IV

Multilayer imaging, drawing, and database program that includes 30-by-32-inch adjustable drawing page and allows up to 32 database types with 255 fields per type. Includes report generator. \$495. Marvelin, 213/450-6813.



Filevision IV

Ft. Knox

Software security product provides sanitization (clearing out of data so that it cannot

Keep your sensitive material off the record.

Documents on your Macintosh® desktop are just like the ones lying on your desk. Vulnerable to prying eyes.

So quickly lock up all your confidential information with our Sentinel™ data encryption program. Using any of three high-speed encoding techniques, including one of the fastest available implementations of DES*, the U.S. government's official data encryption standard.

Convert documents or folders into secure code.

And open them with passwords you define. Or create special sets of frequently used files and folders. For quick, easy access with just one password.

You can even copy, back up or transmit encoded files.

Or automatically track and lock all unencrypted documents at once.

No other data encryption program offers you greater security, convenience—and peace of mind.

See it today at your SuperMac™ software reseller.



The first. And still champion.



485 Potrero Avenue • Sunnyvale, CA 94086
408 • 245 • 2202 (Dept. 300)

©1989 SuperMac Technology

SuperMac and Sentinel are trademarks of SuperMac Technology.

Macintosh is a registered trademark of Apple Computer, Inc. *Available only in the U.S. and Canada.

All Rights Reserved

Circle 325 on reader service card

SONY

Boxed in Tens

3.5" SS 1G36A12

3.5" DS 1G38A12

Boxed in Tens

3.5" HD 1G37A11



100+

1.10 ea.

1.12 ea.

30+

2.84 100+ 2.79 ea.

MAC-PAC

Bulk Packaged in 50's

3.5" DS 1H38A13

100+

.94 400+ .92 ea.

Diskette Labels 5¢ each
Minimum 50

USA★FLEX

1-800-872-3539

FAX# 312-351-7204

Minimum order \$100. No surcharge for MasterCard and Visa. Shipping and handling additional

135 N. Brandon Drive, Glen Ellyn, IL 60139

Circle 54 on reader service card.

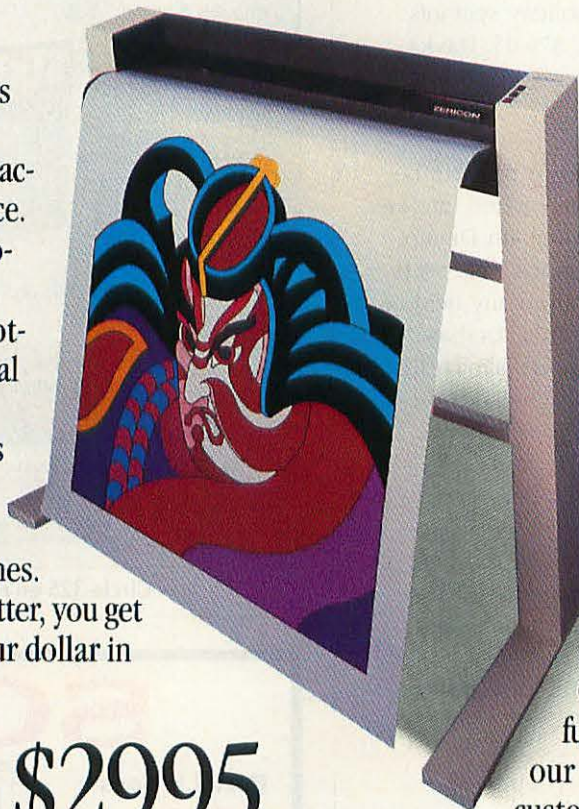
Large format plotters for designers who want performance, but can't afford expensive.

Best Price Performance

These days more companies are concerned about CAD budgets but don't want to sacrifice quality or performance. That's why more design professionals are turning to Zericon for large format plotting solutions. At 21 diagonal inches per second and advanced speed up features like look ahead vector analysis, you'll fly through curves as well as straight lines. When you buy a Zericon plotter, you get the best throughput for your dollar in the industry today.

\$1695. - \$2995. Factory Direct Pricing

Starting at \$1695. for our ValueLine D size, to \$2995. for our Designer Series A-E model, we make a large format plotter that's just right for your application.



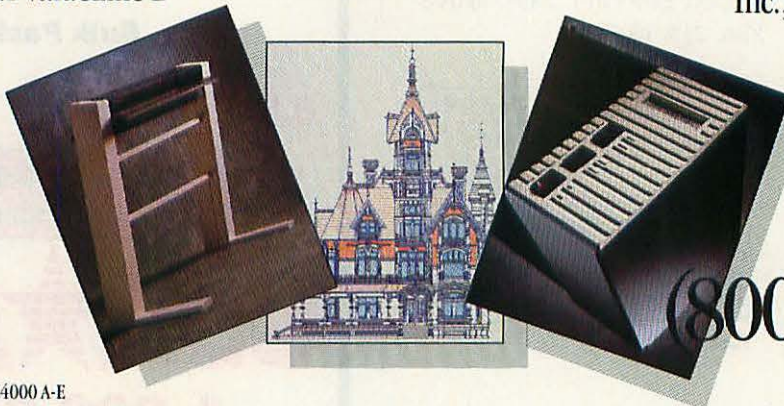
FEATURES	3610	3620	Z3000	Z4000
MEDIA	C/D	C/D	A-D	A-E
PRICE	1695.	1895.	2695.	2995.
8 PEN OPTION			395.	395.
DIA/SPEED	7ips	15ips	21ips	21ips
REPEATABILITY	.004	.004	.004	.004
LCD MENU			X	X
CUSTOM CABLE	X	X	X	X

No Risk Money Back Guarantee

Call Us Today and we'll send you a full-size sample plot and tell you about our 1 year reliability warranty and our customer support program which includes complete product satisfaction or your money back within 10 days of purchase. We'd like to win you over as a Zericon customer. And we've got the products and service to do it. Give us a call. Zericon,

Inc., 40491 Encyclopedia
Circle, Fremont,
CA 94538.

In CA (415) 490-8380.
FAX (415) 490-3906.



(800) 727-8380

Japanese Warrior created on the Zericon Z4000 A-E

ZERICON

More plotter. Not more money.

Circle 118 on Reader Service Card for Immediate Response
Circle 267 on Reader Service Card for Literature

See Us At
Design West
Anaheim, CA
BOOTH #516

Made in USA

Winner

1989
MacWorld
Magazine
World Class
Award

Colorful choice.

PixelPaint 2.0, the best value for your 8-bit color Macintosh.
Or PixelPaint Professional, the most powerful
graphics program for any color Mac.

The first. And still champion.

PixelPaint™ The first color paint program for the Macintosh.*

Now there are two new SuperMac™ color paint programs. For creating superior color graphics with ease. PixelPaint 2.0, to get the most out of your 8-bit color Mac.* And PixelPaint Professional™ for the highest quality graphics in 8, 16, 24 or 32-bit modes.

PixelPaint 2.0. Excellent performance. Excellent value.

PixelPaint 2.0 lets you work easily with tools you use every day—like pens, brushes, lines and shapes. And gives you versatile tools for precision work—like masks and a PANTONE® Color selector. You can even make your own color separations.

You'll get the most out of 256 colors on your 8-bit system. With tools like our PixelScan™ scanning utility. And advanced computer effects like dithering, for smooth blends of up to 256 colors.

PixelPaint Professional. Exceptional graphics on any color Mac.

We've revolutionized the features we pioneered with PixelPaint. To take advantage of the millions of colors available in 16, 24, and 32-bit modes. And to dramatically improve how you work in 8-bit mode.

These new true color tools work easily and naturally. Mix colors on screen like paint on a canvas. Add transparent tints and shadows. And use real anti-aliasing for smooth shapes and blends. To create

photographic-quality images. For the first time on a personal computer.

Make the right choice.

PixelPaint 2.0 and PixelPaint Professional. See for yourself at your SuperMac software reseller. (And if you already own a color Macintosh paint program, ask us about our Software True Color TradeUp™ offer.) Then choose the one that's right for your business—and your budget.



PixelPaint Professional delivers the best possible graphics on any color Macintosh. Its revolutionary true color tools work naturally, to let you create and enhance photographic-quality images.

PixelPaint 2.0 gives you outstanding performance and value on your 8-bit, 256-color system. With easy-to-use tools, and a PANTONE selector for specifying industry-standard colors.



The first. And still champion.



485 Potrero Avenue, Dept. 300 • Sunnyvale, CA 94086
408 • 245 • 2202

© 1989 SuperMac Technology. All Rights Reserved. SuperMac, PixelPaint, PixelPaint Professional and TrueColor TradeUp are trademarks of SuperMac Technology. PANTONE is a registered trademark of Pantone, Inc. Macintosh and Mac are registered trademarks of Apple Computer, Inc. All other brand and product names are trademarks of their respective holders.

Circle 309 on reader service card

be accessed by subsequent users), and file encryption and decryption. Runs in the background under MultiFinder. \$195. Transfinite Systems, 617/969-9570.

Genesis

Design and presentation tool provides an object-oriented drawing environment for drawing symbols that represent ideas or processes. Lets the user link related symbols, attach headings to them, and create hierarchies. \$149.95. Futuresoft System Designs, 212/674-5195.

Hot-Spot

Graphics- and text-linking tool that serves as a text and graphic authoring system. Lets you place graphics and text files in any application, and link graphics to graphics or text using point-and-click

method. \$79.95. Antic Software, 415/957-0886.



Learn Word 4

Learn Word 4

Self-paced tutorial for Microsoft Word version 4.0 that provides audiocassette and disk-based interactive instruction. \$49.95 per module. Personal Training Systems, 408/559-8635.

MacLog

Wireline-log evaluation application for geologists. Measures subsurface rock characteristics, processes subsurface

measurements, and transforms data into values of porosity and hydrocarbon saturation. \$4000 plus \$500 for digitizing software. Bowler Petrophysics, 303/860-1641.

MacSticker

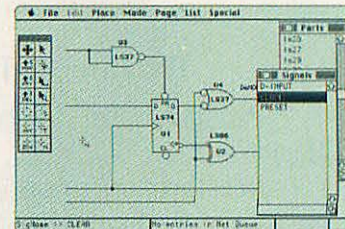
Drawing program for designing and printing custom signs, labels, name tags, and badges. Includes sticker templates, clip art library, and 32 sheets of 8½-by-11-inch self-adhesive sticker stock. \$49.95. Intercontinental Computer Services, 312/440-1721.

MaxNotes

Front-end application for Digital's VAX Notes electronic conferencing system. Uses Alisa's TSSnet Macintosh DECnet package to connect to remote VAX Notes conferencing servers via DECnet. \$295. Alisa Systems, 818/792-9474.

McLogic

Design tool for electronics engineers. Allows an engineer to enter a schematic directly onto the Mac. Outputs to a variety of schematic-capture programs or directly into the simulators resident on those programs. \$1995. Eclipse Software, 215/696-2801.



McLogic

Mr. Postman

HyperCard stack designed to help users prepare for U.S. Postal Service Employment exam. Contains address-checking exams and memory-for-
(continues)

Put Your Business on the Map!

GeoQuery® shows you where things are. It maps out your clients, prospects, branch offices, warehouses, archaeological sites—anything!

It instantly turns them into points on a map, right there on your Macintosh screen.

Maximize Your Results

Use your GeoQuery maps to...

- target mailings for maximum results...

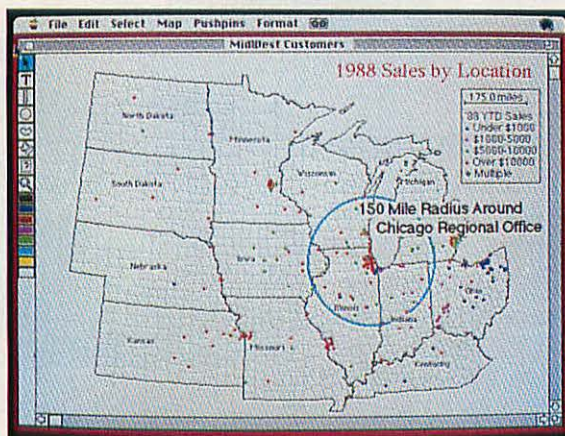
- see more customers on your next business trip...

- pick the best location for your meeting...

- define optimum business districts or sales territories (a blessing for sales and marketing managers)...

- spot geographic trends...

- create presentation-quality maps



Q. "How much of my business is within 150 miles of Chicago?"

A. "Just draw a circle around Chicago. GeoQuery gives you the answer."

for group distribution. Best of all, GeoQuery works with your own mailing lists, databases, or spreadsheets.

Ask Questions...Visually!

Just point, click, and draw to answer

the hundreds of *who*, *what*, and *where* questions that have been burning up hours of your time.

GeoQuery can map out your business directions...and literally put your business on the map!

Available at Dealers Nationwide

For a GeoQuery demo disk, send \$2.50 to cover postage & handling to:

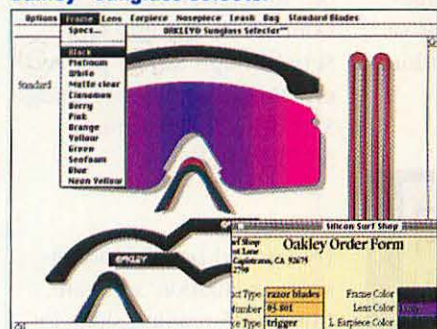
Odesta Corporation
4084 Commercial Avenue
Northbrook, IL 60062
Att. G.Q. Demo Disk or
Call: 1-800-323-5423
(In IL: 312-498-5615)

GeoQuery \$349 List
ADO2GQ/100189

© 1988 Odesta Corporation. Macintosh is a trademark of Apple Computer, Inc.; GeoQuery is a trademark of Argii Design Group

TRUE STORIES.

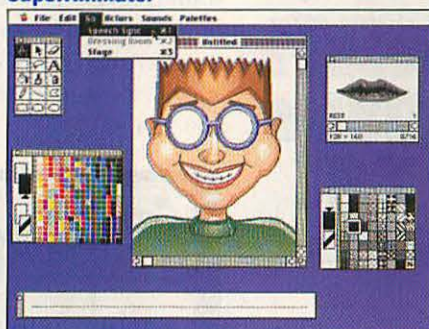
Oakley® Sunglass Selector



W.R. Robertson Advertising

With this interactive brochure, anyone can design a custom pair of sunglasses on screen and order automatically. This multimedia standalone uses color, digitized music and voice, animation and custom menus.

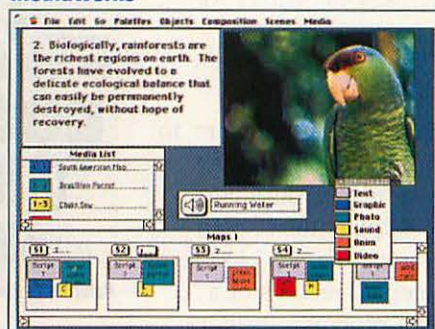
SuperAnimator™



Joseph Matthews, Bright Star Technology

SuperAnimator is a toolkit for creating animated "agents" with synchronized sound. A commercial product created in SuperCard, it incorporates the elements of a traditional Macintosh® application.

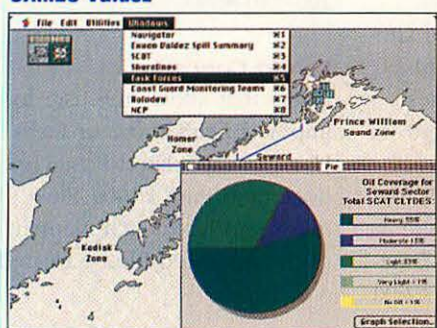
MediaWorks



Edward F. Boyle, Institute for Research on Learning

This multimedia composition environment was created as an Apple Classroom of Tomorrow project to allow 12-year-olds to create their own educational applications by combining information from a variety of sources.

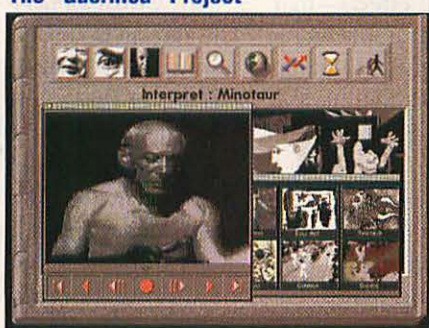
CAMEO Valdez



Concept and Graphics: National Oceanographic and Atmospheric Administration and Gertel Systems, Programming: Peter C. Horvath

NOAA and the U.S. Coast Guard monitored the Exxon Valdez oil spill cleanup and conducted daily briefings using this interactive information system that combines maps, graphs and databases.

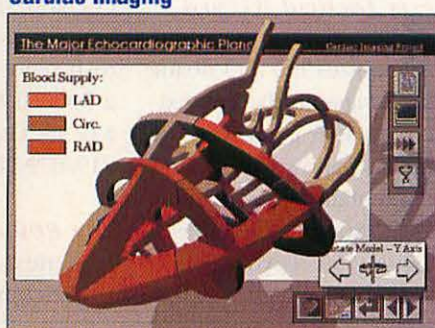
The "Guernica" Project®



The Guernica Project creative team: Robert Abel, Alvin DelBosco, Jonathan Gelson, Jerry Hoshell, Eric Martin, Morgan Newman

This stunning graphical interface is the interactive front end to a multimedia database related to Picasso's famous painting. Starting from *Guernica*, users can explore nearly any path of association imaginable.

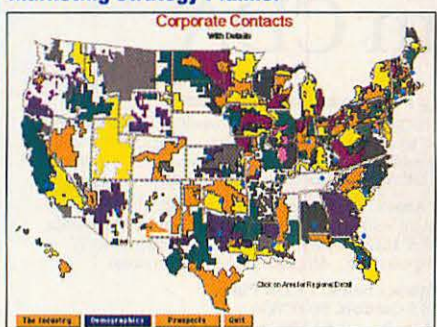
Cardiac Imaging



C. Carl Jaffe, MD & Patrick J. Lynch, MS, Yale University School of Medicine

This interactive medical education project makes use of color graphics, interactive video, digitized sound and images created in Super 3D™ to teach residents and clinical staff at Yale University School of Medicine.

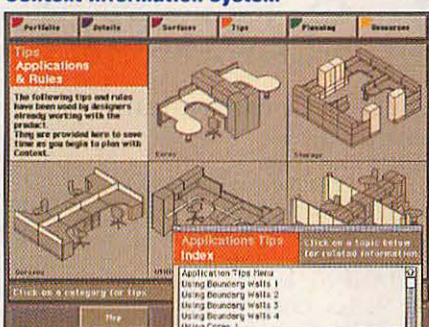
Marketing Strategy Planner



The HyperMedia Group

This hypermedia information system was designed for boardroom presentations and strategic analysis. By clicking on the graphics, speakers can pull up relevant data and analyze it quickly in response to questions.

Context Information System



Creative Interactive Media

Steelcase Furniture uses this interactive multimedia presentation and electronic catalog to present their new line of modular office furniture, "Context." It incorporates Super 3D™ models and animations.

Inigo At Home



Amanda Goodenough, AmicusStories™

Inigo achieved fame in the HyperCard® story stack entitled, "Inigo Gets Out." Author Amanda Goodenough easily converted her charming character to SuperCard and colored his world.

Suggested
Retail Price
\$199

Available Now
Through Your
Local Dealer

SUPERCARD™

the personal software toolkit.

System requirements: Macintosh Plus, SE, SE/30, II, IIx or IIcx, System 6.0.2 or later.
SuperCard, Super 3D and the Silicon Beach Software logo are trademarks of Silicon Beach Software, Inc. All other trademarks are the property of their respective owners.

Circle 266 on reader service card



SILICON BEACH
SOFTWARE

P.O. Box 261430
SAN DIEGO, CA 92126
(619) 695-6956

address exams, both of which are required by the U.S. Postal Service. \$24.95. Mac of All Trades, 702/646-2185.

Mum's the Word

Garden-planning software to help in designing gardens: selecting plants, deciding where to plant them, planning for continuous bloom, and keeping records of a garden's progress. Includes horticulture database and draw program. \$125. Terrace Software, 617/491-4725.

Nemesis Tactical Wizard

Software tutorial for the game of go. Analyzes life and death tactics *tsumego* in the context of the particular game you are playing, and allows you to explore potential moves to see the result. Runs with Nemesis Go Master. \$59. Toyogo, 617/861-0488.



Paint Tools Plus

Paint Tools Plus

Collection of tools and accessories—including patterns, gray scales, paintbrushes, rulers, and special effects—that can be installed in any Macintosh paint program. Contains a Special Effects tutorial. \$49.95. Galileo Software, 219/879-7803.

The Philadelphia Zoo

Hypertext-based tour of the Philadelphia Zoo. Stack con-

tains more than 1000 trivia questions about animals. Has sounds and digitized images of animals. Includes maps of the zoo and zoo information. \$29.95. Everett Faircloth, 609/354-8117.



The Philadelphia Zoo

QuickMail Bridges

Connectivity products for CE Software's QuickMail. QM-Connect Bridge exchanges mail and multiple files and is accessible through Tymnet and Accunet; QM-Serial Bridge provides a direct hard-wire link to mainframes; QM-Data-Collection Bridge collects text

from QuickMail messages and adds it as a tab-delimited record in selected text files. QM-Connect Bridge and QM-Serial Bridge \$99.95 per server; QM-DataCollection Bridge \$149.95. CE Software, 515/224-1995.

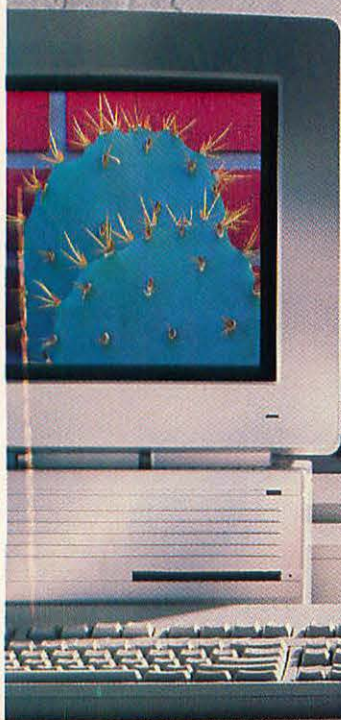
ReSet

HyperCard-based reading-skills-evaluation software. Checks 23 reading skills in the categories of resource skills, comprehension, vocabulary, and word structure. \$79.95. Lazybones, 206/736-8680.

Studio Convert

Utility that allows the user to import a LetraStudio or Free-Hand encapsulated PostScript document into Adobe Illustrator and have each element of the imported file be treated (continues)

Another Complete Ready-to-Run Macintosh System from CDA



Macintosh IIx Color System

Complete system includes:

- Macintosh IIx Computer w/ 40 Megabyte Hard Drive
- 1 Megabyte of Memory
- Extended Keyboard & Mouse
- 1.44 Megabyte Disk Drive
- Macintosh II Video Card
- Apple RGB Hi-Res. Color Monitor
- ImageWriter II Printer w/ cable
- HyperCard Software
- Dust/Covers for Complete System
- Package of Computer Paper
- Box of 10 Diskettes & Mouse Pad

Package #X8950 (delivery 152.00)

Sugg. list \$7606

CDA Price \$5795

Save Over \$1800

Lease for only \$159/month*

*For Qualified Businesses, Based on a 48 Month FMV Lease

Shipping Information & Policies

Delivery charge includes shipping, handling & insurance for **DHL Door to Door Express Service** to the continental US, Alaska, Hawaii & PR. DHL to Canada add \$20 to delivery charge. DHL worldwide call or fax for rates.

Visa, MC, Amex, and Discover Accepted.

CDA is not an authorized Apple dealer. Apple, Macintosh, HyperCard & ImageWriter are registered trademarks of Apple Computer Inc. All prices subject to change.

CDA Computer Sales, 1 CDA Plaza

PO Box 533 Califon, NJ 07830

Outside US/in NJ 201-832-9004; Fax# (201) 832-9740

Mon-Fri 9am-10pm, Sat. 9am-5pm EST

Customer Service (201) 832-9007; 9AM-4PM EST

Compuserve's Electronic Mail-GO CDA



US/Canada Call Toll Free 800-526-5313

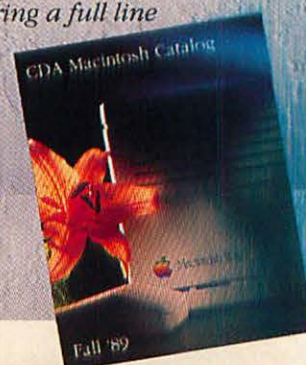
Call or write for our free Macintosh Users' Catalog featuring a full line of Apple Macintosh systems, hardware, software, accessories and more.

Ad #28-10

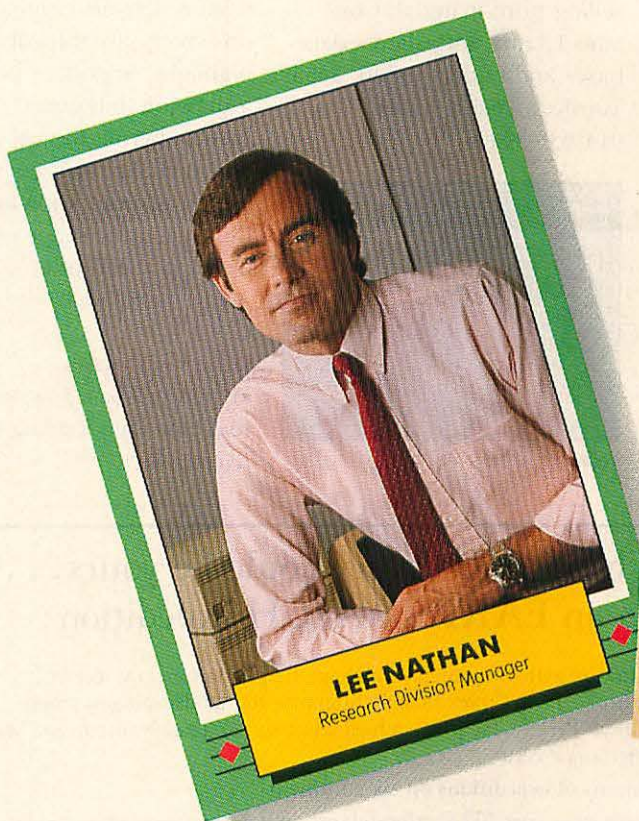
CDA

computer sales

Mailorder Exclusively Since 1980



Big-league stats for the serious player.



LEE NATHAN
Research Division Manager

LEE NATHAN
Research Division Manager

CAREER HIGHLIGHTS:

- 1982** Used SPSS data analysis system on VAX™ mainframe for customer surveys. Eliminated outside costs of more than \$75,000.
- 1984** Designed sales-lead tracking system, using SPSS data management and charts. Slashed overhead costs—and gave more accurate results in half the time.
- 1986** Promoted to Manager of corporate-wide research and strategic planning staff, in recognition of outstanding contributions to overall profits.
- 1988** Put Macs on employee desktops, dramatically boosting productivity.

Another Story in the SPSS SUCCESS SERIES

When you want more data analysis power from your Macintosh®, the only game in town is SPSS®.

When you've got to know the score, you need more than an ordinary stat package. You need the most powerful data analysis software ever created for the Macintosh: SPSS.

Only SPSS for the Macintosh gives you all the same analytical capabilities as our legendary SPSS mainframe and workstation software.

So you get more ways to turn data into knowledge.

Our Macintosh user interface puts you in control of data and file management. Basic and advanced statistical procedures like time series analysis and forecasting, nonlinear regression, discriminant analysis and more. Plus award-winning presentation graphics and tables to let you display your results.

In short, you get more statistical methods and features with SPSS than with any other Mac software.

And SPSS also gives you one other

vital feature: the SPSS support team that's come through for over a million users in the last 20 years.

So if you're serious about winning, don't settle for anything less than the power you need. Find out more about SPSS by calling

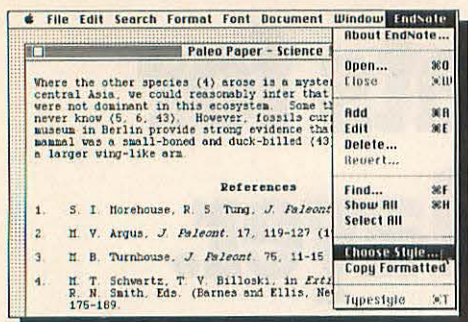
[312] 329-3323.

And get the knowledge to be first in your field.

SPSS inc.

Best in the final analysis.

444 North Michigan Avenue, Chicago, Illinois 60611
SPSS International BV: Avelingen West 80,
P.O. Box 115, 4200 AC Gorinchem,
The Netherlands



Bibliographies in Word!

Keep a database of up to 32,000 references. Create bibliographies automatically in the style you need. Access your database from your word processor using the EndNote DA. Works with Microsoft Word (including Word 4.0!), MacWrite, WriteNow and WordPerfect. \$129.

EndNote®

**A REFERENCE DATABASE
AND BIBLIOGRAPHY MAKER**

Niles & Associates, Inc., (415) 655-6666
2000 Hearst Street, Berkeley, CA 94709

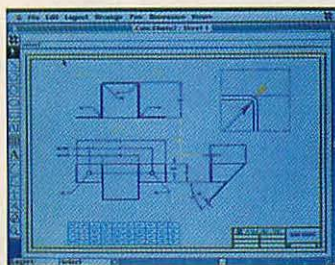
*"The program is worth its weight
in gold to those of us in the
desktop-publish-or-perish set."
[MacWorld, February 1989]*

Circle 399 on reader service card.

as an object. Allows consistent assignment of color and line weight. \$149.95. ISDC, 312/705-9107.

Ta Biblio

Database for antiquarians, and out-of-print and second-hand booksellers. Based on Odesta's Double Helix II; designed to organize and simplify the daily details of business for selling print material. Contains Library and Clients databases and Orders menu. \$495. TurnKey Technologies, 914/633-3940.



Vellum

TK Solver Plus

Mac version of this equation-solving and knowledge-management software. Incorporates Mac user interface and graphics. \$395. Universal Technical Systems, 800/435-7887, 815/963-2220 in Illinois.

Vellum

Engineering and drafting CAD software. Drafting Assistant feature delivers continuous on-screen visual feedback and highlights important points in a drawing. Integrated parametrics permit the user to conceptualize designs on screen without knowing exact dimensions or shape of the drawing ahead of time. \$995. Ashlar, 408/746-0749.

WeatherStation

HyperCard-based system for real-time data logging of temperature. (continues)



The next discovery could be yours... on an EARTHWATCH expedition

Working with volunteers of all ages, help monitor coral reef in Belize... Help survey Inca architecture and landscaping in mountainous Peru... Help an archaeologist survey a newly discovered Maya ceremonial center.

Dozens of expeditions on six continents

Right now, over 100 Earthwatch expeditions are being mounted in every scientific discipline, bound for points throughout the world. They'll be led by outstanding people, scientists who need your help. As a team member, you'll be helping to fund the expedition you accompany.

You can expect an intense learning experience with a lot of challenges. You'll be taught in the field by professionals. A background in science isn't necessary. You'll learn as you go.

Join Earthwatch as a member

As an Earthwatch member, you'll receive a subscription to Earthwatch Magazine, the colorful chronicle of Earthwatch activities throughout the world. It contains descriptions and photos of all the expeditions. You'll also receive the Expedition News, the quarterly report of the latest findings from the field and news of upcoming expeditions.

You don't have to go on an expedition to be an Earthwatch member. But you do have to be an Earthwatch member to go on an expedition.

Don't delay. Whatever your interest, it all begins with membership. Your tax-deductible contribution of \$25 will make you a member.

EARTHWATCH

(617) 926-8200

Dept. 900 • Box 403 • Watertown, MA 02272

The power and performance of big system CADD...MicroStation Mac

Intergraph introduces MicroStation Mac — microCADD software merging the power of 2D/3D engineering design software with the ease of the Macintosh user interface.

Multiple-screen graphics

MicroStation Mac supports a maximum of eight separate views of a design. These are resizable and can be placed on any of up to six graphic screens, the maximum supported by the Macintosh. This allows for better display flexibility, resulting in more productivity and less design time.

Reference files

MicroStation supports 2D and 3D design and reference files so a user can attach up to 32 design files to the current file for reference. Reference files can reside locally or be accessed remotely over a network, thus allowing users working on the same project to view all the files simultaneously.

Image showing the Apple Macintosh user interface.

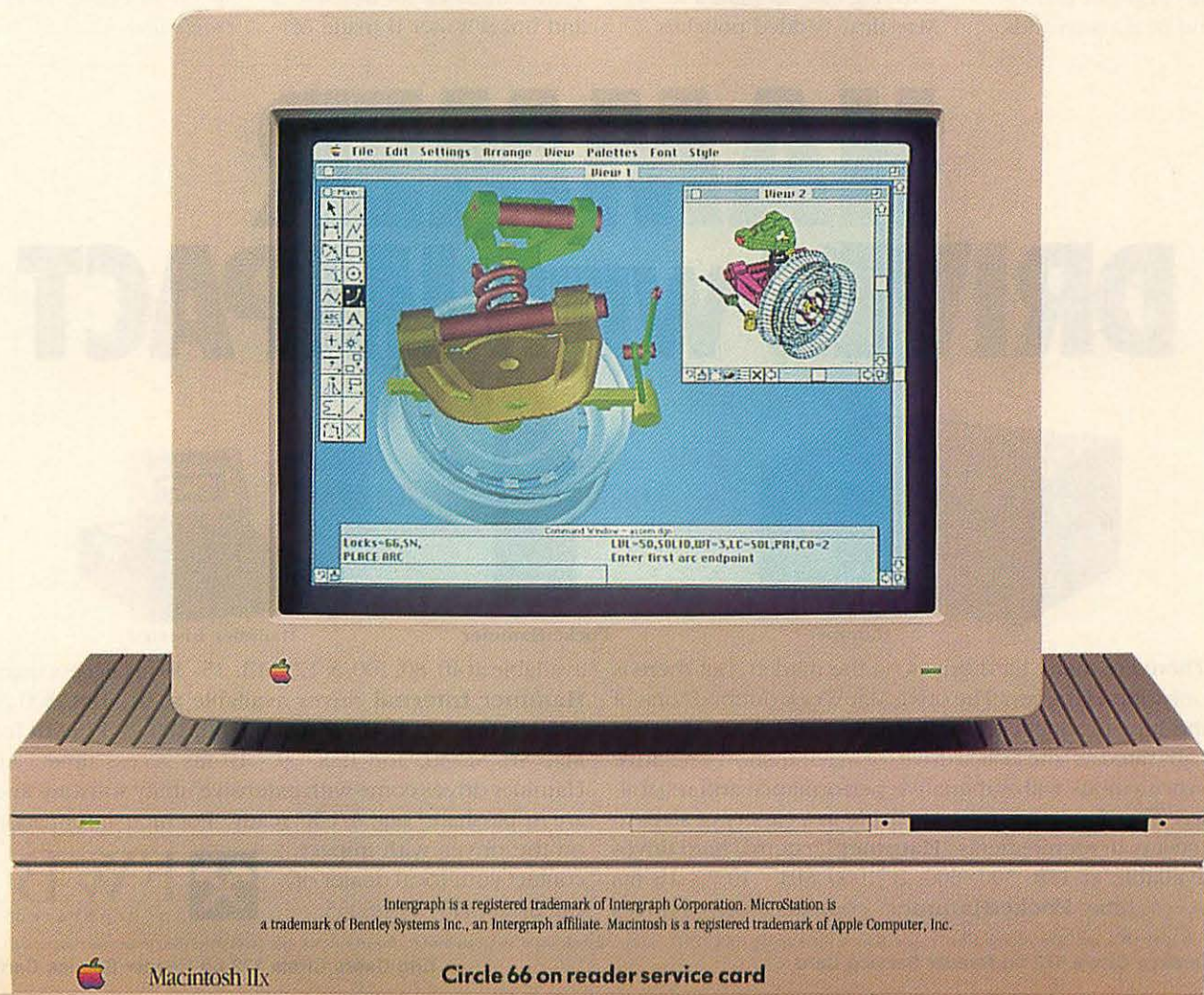
Fully Intergraph-compatible

Files are maintained in the same binary format on every platform so that MicroStation/IGDS files can be freely transferred between the VAX, PC, Intergraph workstation, and Macintosh with no translation required.

With over 450 commands and features to meet your design needs, MicroStation Mac exemplifies the most complete functionality of any CADD package available for the Macintosh, making MicroStation Mac your best choice for design needs.

For further information on MicroStation and the Intergraph Education Center and Reseller programs: in the U.S., call 800-345-4856; in Alabama only, call 800-345-0218; outside the U.S., contact an Intergraph sales office.

INTERGRAPH



Intergraph is a registered trademark of Intergraph Corporation. MicroStation is a trademark of Bentley Systems Inc., an Intergraph affiliate. Macintosh is a registered trademark of Apple Computer, Inc.

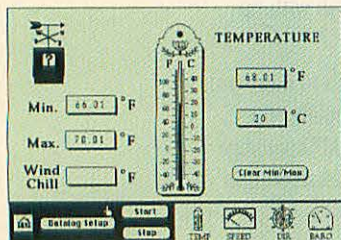


Macintosh IIx

Circle 66 on reader service card



perature, barometric pressure, wind speed, and wind direction. Comes assembled with sensors mounted on stub mast, microprocessor-based interface, HyperCard, and cables. \$595. Design Engineering, 413/624-5557.

**WeatherStation****Wild Things**

Program that adds animation as well as mathematical and statistical capabilities to HyperCard. Provides 40 ready-to-paste HyperCard commands and instructions for writing new commands.

\$150. Language Systems, 703/478-0181.

XVT for the Mac

Software that allows programmers to develop and maintain one set of application source code for Windows, Presentation Manager, and the Mac environment. One XVT call can produce many native toolkit calls and handle a variety of programming details. \$595 (no run-time royalty fee). GSS, 503/641-2200.

ACCESSORIES**Glare Eliminator**

Antiglare, antireflective aerosol optical coating. \$29.95. OptoTechnics Company, 312/205-0340.

Macintosh IICx Case

Carrying case designed for the Mac IICx. Padded pouches

**Macintosh IICx Case**

store mouse and accessories above the CPU; zippered sleeve protects extended keyboard. Includes cord keeper and paper pocket. \$85. West Ridge Designs, 503/248-0053.

Macintosh II Transport Systems & ImageWriter II Case

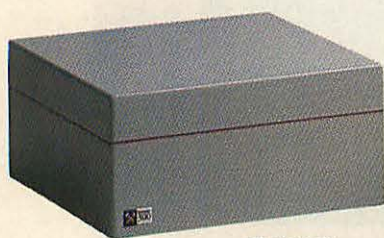
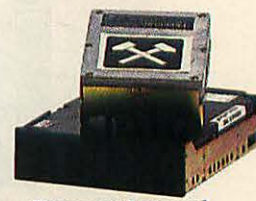
Transport cases for the Mac II and ImageWriter II made of

2024 alloy. Mac II/IICx system comes with two cases; one for an RGB monitor, one for a keyboard and accessories. Mac II/IICx system \$799.95; Mac IICx system \$719.95; ImageWriter case \$369.95. Zero Halliburton, 818/897-7777.

**Mac II Transport Case****Ripper Stripper**

Lightweight plastic device for stripping perforated edges from computer printouts. Works on up to 25 printout sheets at a time. \$9.95 plus \$3 (continues)

HAMMER DRIVES WITH IMPACT

**Hammer****PocketHammer****Hammer Internal**

There are many hard drives on the market, but there is only one Hammer. The drive MacWeek dubbed "one of the best products on the market." The drive MacUser Labs rated as "the fastest drive for Macintosh..." The drive synonymous with superlative performance and reliability. The Hammer is now available in a variety of sizes to meet your requirements. **Hammer™** external hard drives available at 188, 300, 600, & 1000 MB. 10.7 - 18 ms access time. **PocketHammer™** compact external drives

available at 40, 80, 100, & 175 MB. 15 - 19 ms access time.

Hammer Internal drives available at 91, 188, 300 & 425 MB for Mac II/IICx and at 40, 80, 100, & 175 MB for Mac SE, SE/30, and IICx. 9 - 19 ms access time. All Hammer drives come with extensive utility software and are AppleShare® and A/UX® ready. For more information on the drives with impact, contact your local dealer or call us at (415) 474-8055.





The First Color/Gray-Scale Scanner For Under \$2700!



Microtek presents the MSF-300Z. The one scanner that can do it all: color, gray-scale, drawings and text. All for a price that until now, could barely buy you gray-scale capabilities.

Hard to believe, but it's true. You can scan vivid color images into your computer for desktop publishing, presentation graphics or pre-press work. A full 16.8 million colors at a time.

If you don't have a color application yet, this unique scanner captures gray-scale as well as black and white. So you can start working today.

Images can be scanned in 256 gray-scale mode and then retouched, scaled or rotated. And printed on a laser printer or phototypesetter with outstanding results.

Charts and drawings are quickly scanned in single bit-per-

pixel mode then imported into your favorite publishing or word processing program. You can even bring words into your computer without retyping by adding OCR software.

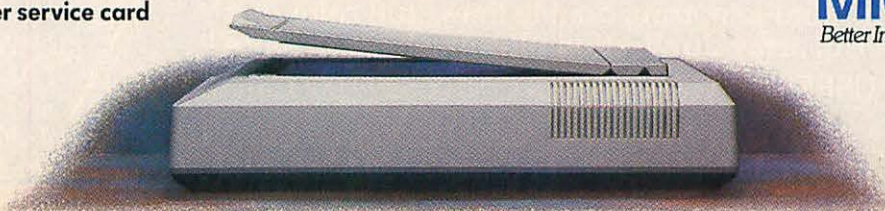
The Microtek Color/Gray scanner also comes with sophisticated color, gray-scale and black and white image editing software. Making it an even more outstanding value.

If you need a scanner for your IBM PC, PS/2, or Macintosh, you need Microtek's MSF-300Z Color/Gray scanner. Call (800) 654-4160 or in California (213) 321-2121 today to find your nearest Microtek dealer. After all, at this price, you can hardly afford not to.



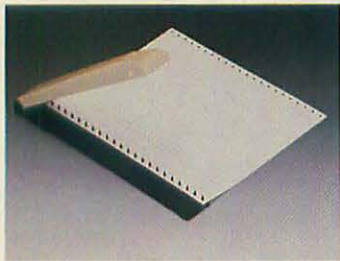
The MSF-300Z Color/Gray scanner is just one member of a whole family of innovative scanners available from Microtek.

Circle 427 on reader service card



MICROTEK
Better Images Through Innovation.

s/h. Amdica Capital Corporation, 604/383-0933, Fax 604/383-8299.



Ripper Stripper

Winging-It

Audiocassette of air traffic control communications with an Airbook containing instructions, tutorial, airport surface maps, a glossary of traffic control terms, and flight plans. Gives traffic and weather alerts. Designed for use with Microsoft and Sublogic flight simulators. \$12.95. Calypso Products, 800/234-1595.

ZRef

Set of two 8 1/2-by-11-inch ZBasic quick-reference cards for Mac programming. \$10 per set. Master Manufacturing, 213/694-6861.

BOOKS & VIDEOS

Confessions of a Data Administrator

Sets out to provide insight into the problems and solutions of information resource management. Contains topics for both data resource managers and technicians. Written by William Durell. \$49.95 plus \$5.00 s/h, Data Administration, 301 N. Harrison St., Bldg. B, #203, Princeton, NJ 08540.

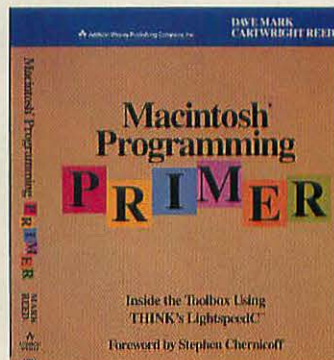
Expert Advisor: Microsoft Word 4.0 for the Macintosh

Reference book for all versions of Microsoft Word up to and including version 4.0.

Contains list of all commands and their functions. Written by Paul E. Hoffman. \$19.95. Addison-Wesley Publishing Co., 617/944-3700.

Macintosh Programming Primer


Book for developers new to the Mac. Covers characteristics and concepts unique to the Mac. Examples in Think's LightspeedC direct the reader from fundamental concepts



Macintosh Programming Primer

through specifics of writing, compiling, and running programs. Written by Dave Mark and Stephen Chermicoff. \$24.95. Addison-Wesley Publishing Co., 617/944-3700.

PageMaker 3 by Example

Self-paced tutorial for beginning and intermediate PageMaker users. A series of models gives increasingly detailed information about PageMaker operations. Written by Tony Webster and David Webster. \$22.95. M&T Books, 415/366-3600. 

.....
To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, Macworld, 501 Second St., San Francisco, CA 94107. We reserve the right to edit submissions.

BLUEPRINT

- Architecture
- Engineering
- Civil Engineering
- Mechanical
- Technical

Move Up to Professional 2D CAD for only \$449.00

There's no longer any need to pay \$1,000, \$1,500, and more for 2D CAD on the Mac. Blueprint provides a complete, professional-level system for only \$449.00. Graphsoft, producer of Blueprint, has years of experience designing award-winning CAD. With Graphsoft's Blueprint you get the quality you expect of professional-level CAD backed by a 30-day money-back guarantee. Blueprint offers:

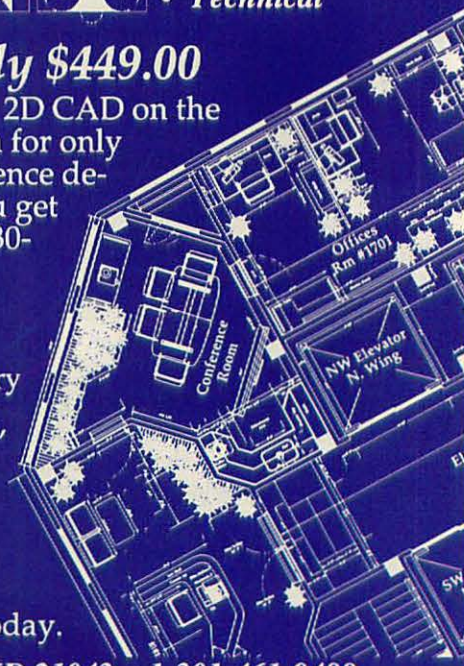
- | | |
|---|--|
| <input type="checkbox"/> Layers | <input type="checkbox"/> Built-in DXF translator |
| <input type="checkbox"/> Multiple scales--high accuracy | <input type="checkbox"/> Encapsulated PostScript |
| <input type="checkbox"/> Advanced auto-dimensioning | <input type="checkbox"/> Hierarchical symbol library |

Also: Object rotation by degrees, minutes, and seconds, fillets, cubic and bezier splines, full-and quarter arcs, text rotation by degrees, a constraint palette that let's you create tangents, parallels, and perpendiculars, and draw at any angle. Hatching, mirroring, zoom, auto-join, trim, double lines, full color, witness lines, powerful array duplication plus much much more!!

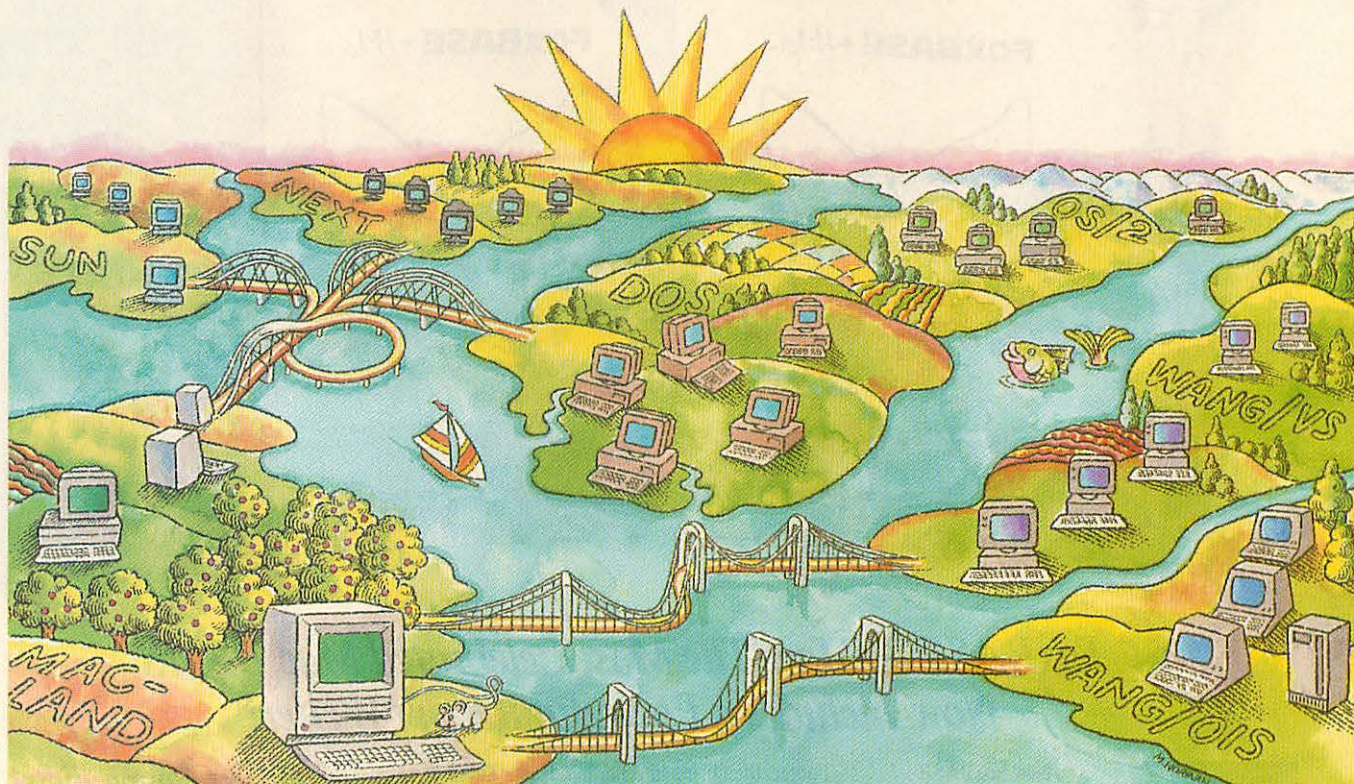
MACDRAW II USERS: UPGRADE FOR ONLY \$299.00! Call today.

Graphsoft

8370 Court House Ave. Suite 202 Ellicott City, MD 21043 • 1-301-461-9488
fax: 1-301-461-9345. In Canada: 604-380-6911 In Australia: 61-7-369-1204



NOW, MACLINK®PLUS TRANSLATES EVERYTHING UNDER THE SUN



The award-winning software package that transfers and translates files between Macintosh and DOS or OS/2 programs now does the same for Sun worshippers. And for the NeXT world.

With MacLinkPlus/PC, you can now send files in either direction between Macintosh and virtually any other desktop environment. Files arrive in the new environment with the correct styles and formats in place—just as if they had been created there.

MacLinkPlus/Wang OIS and MacLinkPlus/Wang VS provide the same bi-directional connectivity between Macintosh and Wang.

TRANSFERS AND TRANSLATES

The MacLinkPlus/PC package arrives with everything you need—software, manual, a direct connect cable (a Hayes modem or compatible also works), and our full library of over 100 translators.*

If you don't need file transfer capabilities (maybe your Macs and PCs already share a network or server), then simply order MacLinkPlus/Translators. It's the same package without the cable and communications capabili-

ties. And, it's the ideal software purchase for anyone with a Macintosh FDHD SuperDrive or external drive that reads DOS disks.

INSTANT PASSPORT TO EVERYWHERE

Make incompatibility a thing of the past with the MacLinkPlus family of Databridge products. For the name of your nearest DataViz dealer, call 203-268-0030 today.

*takes advantage of special connections built into MacWrite® II from Claris™

All product names are trademarks of their manufacturers.

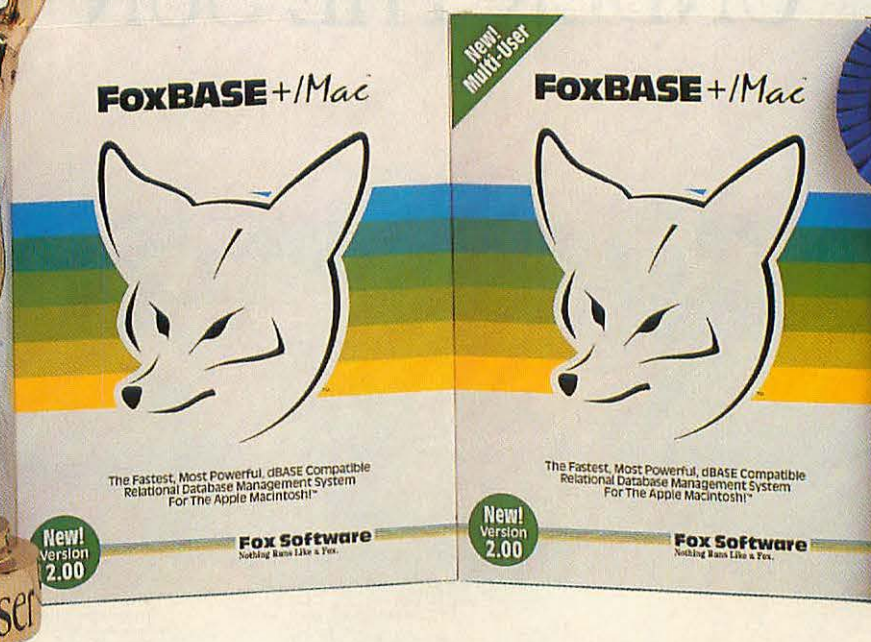


Circle 281 on reader service card

DATAVIZ
THE DATABRIDGE SPECIALISTS



Best Performer!



FoxBASE+ /Mac: The Most Celebrated Mac DBMS Now Includes a Powerful Report Writer!

**New
Version 2.00!**

New FoxBASE+ / Mac Version 2.00 is here—and stealing the show! In its first year, FoxBASE+ /Mac won more awards—both in the U.S. and Europe—than any other DBMS ever created for the Macintosh! And Version 2.00 is faster and more powerful than ever—packed with innovative new features and language enhancements!

New FoxReport!

FoxReport lets you create virtually any columnar or free-form report—without *any* programming! FoxReport includes:

- **Page Layout:** Designate many layout settings for your report: number of columns, left margin setting, column width, space between columns, measurement size for each page, and more!
- **Report Layout Window:** Define the different areas within your report, using FoxReport's new "band" system. Start with the default bands: Page Header, Body, and Page

Footer, then bring in other bands like Title, Summary, Column Headers and Footers, etc.

- **Object Menu:** Control the Type Font, Sizes and Styles of text objects. Fill and Pen options let you change the color and shading of almost every object!

- **Page Preview:** "What-You-See-Is-What-You-Get" design ensures that the report on your screen is *exactly* as it will appear in print!

- **Label Generator:** Create labels of almost any size and configuration. You can even include pictures *anywhere* on the label space!

New Features!

- **Enhanced XCMD/XFCN Support:** Load up to 16 external XCMD's and XFCN's, then access them directly from within FoxBASE+ /Mac 2.00 programs!

- **Language Enhancements:** Other features include: support for custom hierarchical menus, new commands to help handle resources, new system functions to improve filename and screen management, and much more!

Perfect Connectivity!

FoxBASE+ /Mac 2.00's Multi-User version allows complete data and application sharing between networked Macs and PCs! (when used with FoxBASE+ /LAN). It also runs on the most popular network systems: AppleShare, Novell and 3Com! . . . *And It's Faster Than Ever!*

Order or Upgrade Now!

FoxBASE+ /Mac Version 2.00 is the *new* Leader of the Mac! And at only \$495 (\$695 for Multi-User), it's a phenomenal bargain! If you're already a FoxBASE+ /Mac registered user, you can upgrade to Version 2.00 for just \$75!

To order your copy (or ask for a *FREE* demo disk), call (419) 874-0162. Or visit your local quality software dealer.

After all, when it comes to the Macintosh, *Nothing Runs Like a Fox!*

FoxBASE, FoxBASE+ /Mac, and FoxReport are trademarks of Fox Software. Macintosh is a trademark of Apple Computer, Inc.

Fox Software

Fox Software, Inc. (419) 874-0162, Ext. 650
134 W. South Boundary Fax: (419) 874-8678
Perrysburg, OH 43551 Telex: 6503040827 Fox

Circle 152 on reader service card

Quick Tips

Raw hard disks,
eliminating mailing-list
duplicates, quick
disk ejection, and more

by **Lon Poole**

Fonts in a desktop publishing document may get mixed up when you send the document to a service bureau for typesetting. Sending a PostScript derivative of the document avoids the potential mix-up. If you have trouble creating a PostScript derivative by pressing ⌘-F (after clicking OK in a LaserWriter Print dialog box, as described here last January), you may not be holding down that key combination long enough. Doug Smith of Wheaton, Illinois, suggests you press ⌘-F until a message appears on screen informing you that the PostScript file is being created.

COLOR ON AN IMAGEWRITER II

You can print color documents, including overhead transparencies, on an ImageWriter II fitted with a multicolor ribbon. A tip last February suggested printing overheads on film made for the Hewlett-Packard PaintJet printer. If, like David Zimmerman of Austin, Texas, you can't find the film, call 800/752-0900 for the name of an HP dealer near you, or call 800/538-8787 to order directly from HP.

An ImageWriter II with an out-of-alignment multicolor ribbon prints rainbows instead of solid colors. A tip last March showed how to align the ribbon using small adhesive labels as shims under-

neath the ribbon cartridge. You may not need the shims if your ImageWriter II has a ribbon-adjustment knob. Tony Kipouros of Hausen/Brugg, Switzerland, found a description and photo of the knob in the German edition of the ImageWriter II manual. My two-year-old ImageWriter II does

not have the knob (and the manual doesn't mention it), but I presume that newer ImageWriter II printers have the knob and that their manuals explain how to use it.

INTERNATIONAL ERROR

Did you catch my Franco-American error last May? Duane Marcroft of Santa Clara,

California, did. To set the record straight, a modem that uses the Bell 212A protocol (the American standard) *cannot* communicate at 1200 bps with a modem that uses the CCITT V.22 protocol (the French standard). Both use the same carrier frequencies and modulation schemes but different handshaking (connect sequences). Some American modems (such as the Hayes SmartModem 1200) are compatible with both protocols.

DUAL MAC SYSTEM

Q Is there a way to connect my new Mac SE to my Mac 512K (with 1MB of RAM)? I'd like to simultaneously view one file on the SE monitor and another file on the 512K monitor. Obviously, it would be best if I could control the 512K monitor from the SE. If this is not possible, can I connect the two Macs using AppleTalk so that the 512K can use the SE's hard disk?

Matthew Geller

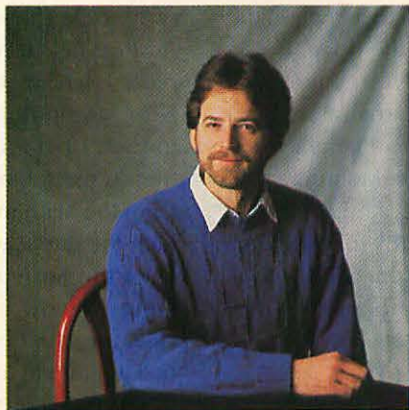
New York, New York

A You can't use your Mac 512K as a second monitor for your SE, but you *can* connect the two Macs with an AppleTalk network. Basic AppleTalk hardware and software are built into every Mac; all you add are connector boxes and cables. You can use Apple's LocalTalk connector kits (model M2068 for the SE, model M2065 for the 512K), Farallon's PhoneNet connector kits (model PN208 for the SE, model PN209 for the 512K), or their equivalents. To access the SE hard disk from the 512K, you must also have file-server or disk-server software such as TOPS, InfoSphere's MacServe, or La Cie's Silverserver.

When you use a remote hard disk over the AppleTalk network, its performance degrades to approximately the speed of a floppy disk. It's also possible to control the 512K from the SE over the AppleTalk network using Timbuktu software from Farallon, but be prepared for similar performance limitations.

BUILD YOUR OWN DISK DRIVE

Q I read with great interest this advertisement by MacWarehouse in the May 1989 *Macworld*: "Quantum 40MB (continues)"



Raw Drive... \$545." The price seemed too good to be true, so I called MacWarehouse to find out whether I could use the product with my Mac Plus. However, it was obvious that the two employees I talked to had no idea what they have or how to use it. I called Quantum but once again did not get answers to my questions. What is needed to use the drive with a Mac Plus? Why does PCPC's MacBottom HD45 drive cost \$314 more, apart from its additional 5MB of storage?

Charles Brinkman
Colorado Springs, Colorado

A The two people I talked to at MacWarehouse (201/367-0440) did not seem very knowledgeable either. However, after much cross-examination, I discovered that you can use the Quantum drive as an external SCSI with a Mac Plus if you also buy a \$189 Cirrus Capsule Kit. Consisting of a cabinet, power supply, fan, cables, carrying case, installation guide, software, and manual, the kit is manufactured by La Cie (503/684-0143), and the case has the same design as fully assembled La Cie external hard drives. Included in the package are La Cie's Silver-server (for local and remote hard disk and modem sharing) and Silverlining (for formatting, partitioning, and other hard-disk management functions).

You provide the labor to assemble the components and format the drive. If you had a Mac SE or a Mac II, you could install the Quantum drive internally using a MACstor Capsule Kit, also manufactured by La Cie, or a UniMac Mounting Kit. MacWarehouse sells each kit for \$99.

When you factor in \$189 for the external drive kit, a MacBottom HD45 costs only \$125 more than the mail-order Quantum. That's what you pay for plug and play.

PAGE LAYOUT GUIDES

TIP: To get accurate spacing between objects in a page-layout document, use boxes as guides. They're perfect for matching the space throughout a publication between a headline and body text, body text and graphic, and so on. Unlike rulers, guide boxes are completely visual, involving no arithmetic. Drag the guide to the

edge of one object, and then drag the other object to the other side of the guide. "Guide Box" shows a guide in use.

Perry Bessas
Cliffside Park, New Jersey



Guide Box

Draw a box (shaded or not) to use as a spacing guide when laying out the pages of a publication. The shaded boxes here, facilitating standard spacing between headlines and body text, will be removed before printing.

REMOVING DUPLICATE ADDRESSES

TIP: You can remove duplicate addresses from a mailing list that you maintain as a Panorama database by using half a dozen menu commands. With the database file open, choose Select All from the Search menu to make sure all records are visible. Then select the field from which you want to eliminate duplicates by clicking on any of its cells (for example, click the Street Address field if you wanted to eliminate all records having duplicate street addresses). Next, group duplicate records by choosing Sort Up from the Sort menu, and blank the duplicates by choosing Unpropagate from the Math menu. Now you can eliminate the duplicate records. Choose Select from the Search menu, and in the data input window just below the menu bar, click the ≠ option and press Return without typing anything else. Finally, choose Remove Unselected from the Search menu. You can record the procedure as a Panorama macro (which is described in the Panorama manual) if you need to use it often.

Determining bona fide duplicates may involve looking at more than one field (the name and address field, for example, to see whether your mailing list contains

(continues)

IMAGE CLUB CD-ROM SYSTEMS

ARTROOM
The ArtRoom™ CD-ROM contains over 120 MB of image club EPS clip art and PostScript fonts. A vast collection of 1200 images and 100 typefaces - plus active library - in one convenient disk.
ArtRoom™ 3.0 CD-ROM: \$999
ArtRoom™ 3.0 CD-ROM with Art CD-ROM drive: \$1599
ArtRoom™ 1.0 PC CD-ROM: \$699 (does not include fonts)

DARKROOM
The DarkRoom™ CD-ROM features a 500MB stock photo library containing over 250 useful clip images. Available in Image Ready and Image Desktop, the images are ready to use in the DarkRoom™ CD-ROM or for your own publishing project. Available for the Mac only.
DarkRoom™ CD-ROM: \$499
DarkRoom™ CD-ROM with artwork of the ArtRoom™: \$299

LETTERPRESS
Letterpress™ CD-ROM is the new Image Club Typeface Library on CD-ROM. Image having 500 downloadable licensed PostScript fonts immediately available for your projects. Also included are editable Adobe Illustrator art files of all the typefaces available in Mac and PC formats. Call for more information.

CALL (403) 242-8000 for your free CATALOG

IMAGE CLUB

Image Club Graphics Inc. 45-1907 11th Street S.E. Century Annex 120 302 FAX: (403) 241-7013
Distribution Office: Shady, Montana

800-661-9410 USA, MasterCard & American Express accepted
Outside USA call (403) 242-8000

Tom Barnes got away from it all.

Because the INFO[®] Show has it all.

PCs, minis, software, LANs, micro to mainframe links, electronic publishing, communications and more... In one solid, informative day at INFO, Tom got a sweeping view of today's fast-changing technologies...plus answers he could trust on connectivity and integration issues. He didn't miss a single element crucial to his strategy. And with his newfound knowledge, he had the free mind that meant he could finally take off for distant places—and get away from it all.

Unlike narrow-focus shows, INFO lets you take in all technologies at one time, in one place. That's important in this rapidly changing industry, where you must keep up with a multitude of possibilities.

At INFO, you can discuss alternative strategies with hundreds of vendors. Their guidance will demonstrate to you how INFO serves as a full-scale resource—your gateway to integrating solutions.

In addition to expanded Software and Computer Security Sections, this year's INFO introduces a new section—Presentation Products. And at our four-day Conference, top experts will update you on the most challenging information technology issues for a minimal investment (\$99 covers 35 sessions).

Take advantage of our discount offer to visit INFO '89. It's the show that has it all.

SPECIAL DISCOUNT OFFER—SAVE \$15!
Tear out this entire ad and bring it to INFO '89. With this ad, you pay only \$10. (Regular registration fee, \$25.)
For additional discount registrations, bring photocopies of this ad.

**For Conference information or a program - call
1-800-255-7798. In Connecticut, call (203) 964-8287.**



October 10-13, 1989
Jacob K. Javits Convention Center
New York, NY

All names, characters and incidents used in this ad are fictitious.

PINPOINT YOUR PROSPECTS.

*Advertisers
interested in
renting
MACWORLD's
Subscriber List,
Please call
John McQuaid,
CompuName, Inc.*

914.925.2401

Don't Forget!



Send for the latest edition of the free Consumer Information Catalog. ☐ The Catalog lists over 200 selected federal publications of consumer interest on subjects like health, nutrition, federal benefits, money management. ☐ The Catalog is free and so are many of the booklets. ☐ Just send your name and address, no strings attached. Write today:



**Consumer Information Center
Department DF
Pueblo, Colorado 81009**

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration.

QUICK TIPS HOW TO

more than one person at the same address). To set up a multiple-field search, make a new text field by adding a new line to the database's design sheet and clicking the New Generation icon (the check mark) in the design window. In any cell of the new field, enter an expression that combines all the fields you want to use as criteria. The following example combines six fields for use as a single criterion:

Name+Company+Address+City+State+Zip

Use your new combination field as the criterion field in the procedure outlined in the previous paragraph.

Paul Chance

Huntington Beach, California

INSIDE-OUT TEXT FLOW

TIP: PageMaker 3.0 normally flows text around the outside of a graphic object, but it can flow text inside the object instead. The key lies in the text-repelling graphic boundary that PageMaker creates around the object; the trick is to turn the boundary inside out. "Flow Within" illustrates the procedure. Here are the steps.

1. Select the object and choose Text Wrap from PageMaker's Options menu. In the dialog box that appears, select the middle Wrap option and click OK. PageMaker draws a rectangular graphic boundary with diamond-shaped handles at each corner.

2. Select the pointer tool from the toolbox and drag the upper-right handle to the left, close to the upper-left handle. Then drag the upper-left corner to the right. Repeat with the lower handles. The graphic boundary is now inside out.

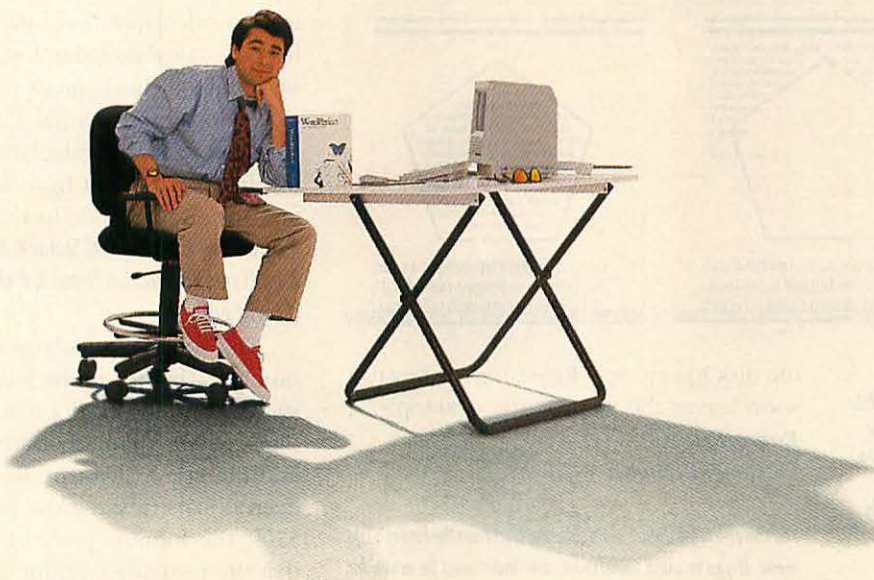
3. Adjust the handles until you get the spacing you want between the text and the inside of the graphic object. For a non-rectangular graphic boundary, add diamond handles by clicking anywhere along the graphic boundary.

One last important note: You may have to experiment with the text handles to make the inside wrap work. For example, the text will not wrap to the inside of a graphics boundary if the text is narrower than the widest part of the graphics boundary.

Paul Schiring

Everett, Washington

(continues)



No Mac is an island.

Especially if you're hooked up with a copy of WordPerfect®.

Because with WordPerfect, the Mac not only stands alone, but works as part of a greater business team.

Macintosh, MSDOS, VAX, DG, and UNIX systems are all trying to connect. And WordPerfect offers more common ground than any other word processor.

Through your network, WordPerfect makes it easier to use the same document on different machines. That's because WordPerfect shares compatible file formats on these different systems.

So once you've transferred a file, you'll find that most of your format settings—like

columns, margins, bold, and underline—remain intact from system to system.

And because the WordPerfect commands and functions are similar from one computer to another, you'll feel comfortable using WordPerfect no matter what system you're on.

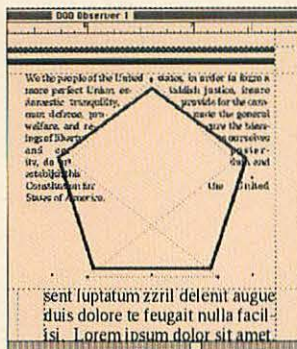
So if you need to share your work, putting WordPerfect on your Macintosh is a smart decision. Because with WordPerfect, you'll never work alone again.

Unless you want to.

WordPerfect
CORPORATION

1555 N. Technology Way Orem, UT 84057
Tel (801) 225-5000 Telex 820618 FAX (801) 222-5898

QUICK TIPS HOW TO



Flow Within

PageMaker 3.0 wraps text around graphics by constructing a graphic boundary that repels text (left). Dragging the handles on the right side of the graphic boundary to the left side and those on the left side to the right side (center) turns the graphic boundary inside out. As a result, PageMaker wraps text inside the graphics boundary (right).

QUICK DISMOUNT

TIP: Recently it occurred to me that there must be some way to eject a disk and dispose of its icon without dragging the icon to the Trash. Well, what about the Option key? Option-⌘-E seemed like a good method, and it works! The only trick: you must hold down the Option key until

the disk has ejected. Releasing the key too soon leaves the icon on the desktop.

Ralph Krug
Dexter, Michigan

You can also press Option while choosing Eject from the Finder's File menu. If you're using MultiFinder, the Finder must be active for these shortcuts to work.

COMPLEX FILEMAKER II LOOKUPS

TIP: Most people use the lookup feature in FileMaker II for tasks like retrieving addresses for invoices from a client list. But it can also be used for more complex tasks, such as indexing a federal withhold-

ing tax table. To create the index, combine in one calculation field the three factors used to calculate federal withholding tax on a payroll check: gross pay, number of deductions, and marital status. The formula below for the calculation field works for any pay amount from \$10 to \$999.99 and any number of deductions from 0 to 9: if (Gross Pay < 100, Marital Status & # of deductions & 0 & int (Gross Pay), Marital Status & # of deductions & int (Gross Pay))

This formula calculates a 5-digit index number. The first of the 5 digits is marital status (1 for single, 2 for married), the next digit is the number of deductions (0 to 9), and the last 3 digits are the gross pay in even dollars (if the gross pay is less than \$100, the formula prefixes it with a 0 so that the resulting amount will have three digits). The Gross Pay field is calculated from the number of hours—which is entered manually—and the pay rate. FileMaker II looks up the pay rate (as well as the Marital Status and No. of Deductions fields) in the appropriate employee record. Calculations begin as soon as you (continues)

MathType 2.0

Equations for Word Processing

Create publication-quality results like this by using MathType 2.0 with your word processor or desktop publishing program:

$$\left\{ \int_a^b \left(\sum_{i=1}^m \lambda_i(x) \right)^p dx \right\}^{\frac{1}{p}} \leq \sum_{i=1}^m \left\{ \int_a^b [\lambda_i(x)]^p dx \right\}^{\frac{1}{p}}$$

Unlike most other equation editors, MathType 2.0 automatically applies the spacing and formatting rules used by professional math typesetters as you build an equation using simple point-and-click editing. When used with LaserWriters and imagesetters, equations are output directly into PostScript, giving unprecedented quality and typographic control. MathType 2.0 features a new, customizable user interface and keyboard access to all functions. MathType 2.0 also includes a PostScript font containing characters used frequently in math and science but unavailable in standard fonts.

Let us show you how MathType 2.0 has set a new standard in equation editing. Ask for our brochure and free demonstration disk including mini-tutorial. MathType's suggested retail price is still only \$149.



Call or write for your
FREE demo disk

6475-B E. Pacific Coast Hwy., Suite 392, Long Beach, CA 90803 • (213) 433-0685

Circle 165 on reader service card.

PREVENT MACINTOSH THEFT!



MacKablit Security System

Heavy duty 10' steel cable secures and locks computer, printer, other equipment, up to 4 components. The unique MacKablit system includes 2 brackets that snap into existing slots on the Macintosh or its peripherals. Additional hardware included for other peripherals that can be secured using existing screws in the equipment. **Internal component security:** Kablit™ fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives. When the cable is passed through the fasteners the screws are concealed. When the cable is passed through all the fasteners the Macintosh system can be secured to the desk.

List price \$39.95 plus shipping. Please specify Mac, Mac Plus, Mac SE, or Mac II. Quantity pricing also available. Money back if returned in 30 days. Purchase orders accepted. Send for catalog.

Kablit security systems also available for most computers.

Secure-It, Inc. 18 Maple Court • East Longmeadow, MA 01028
1-800-451-7592 Dealer inquiries invited.



Circle 239 on reader service card.

Those beautiful ideas in your head need to go on the overhead just as beautifully, but your artistic ability or the guy in graphics just won't cooperate.

But the 4693DX Color Image Printer will. It uses a 300-dpi thermal-wax process in 16.7 million colors so images and type are bright, glossy, and very impressive.

And it prints on paper or transparencies for presentations, overheads and comps, with infinitely more fiscal responsibility than pricey outside services.

The Tektronix 4693DX. It's the perfect printer to have up your sleeve. Call for more information, 1-800-835-6100 Dept. 1C, or fax to (503) 682-3408.



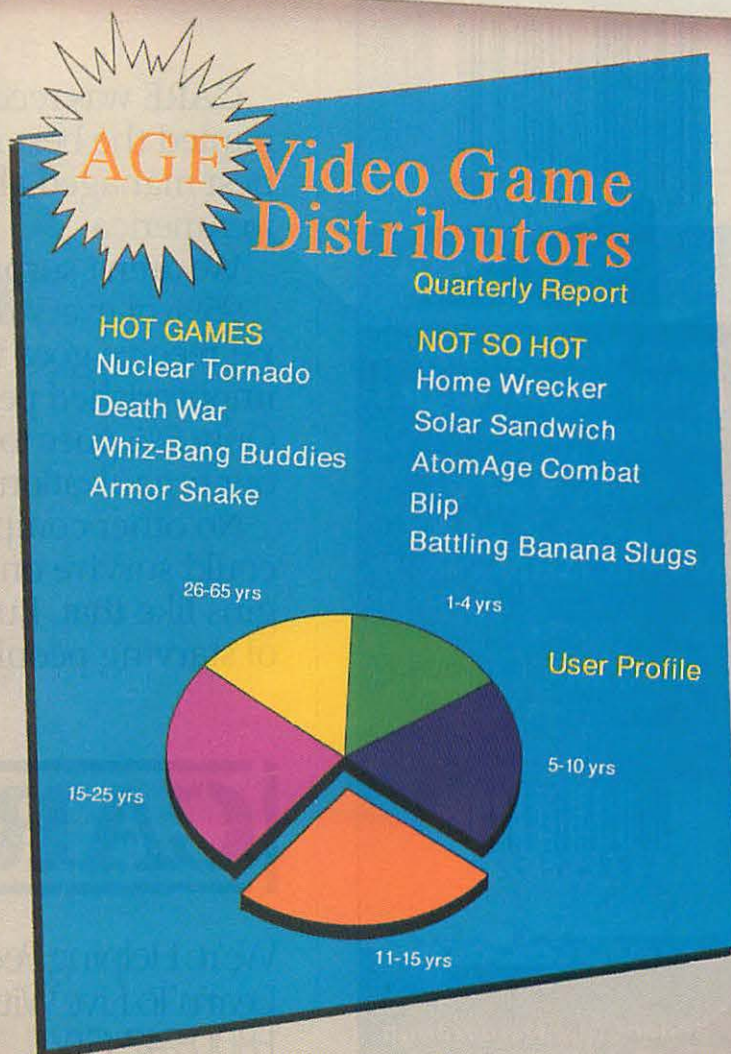
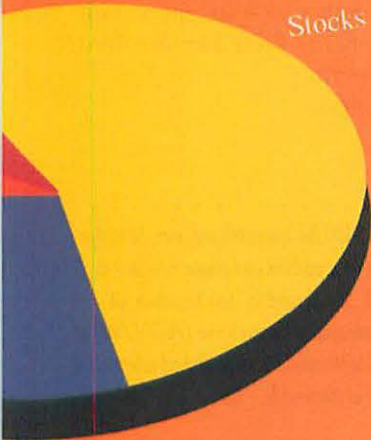
Tektronix®
The best and the brightest.

Magic without the markers.

Investors
lex

Taxable Bonds
CDs
Money Funds

Stocks



Copyright © 1989 Tektronix, Inc. All rights reserved. Mac is a registered trademark of Apple Computer, Inc. The documents in this ad were created by a blind-folded art director with one hand tied behind his back; Adobe Illustrator '88; a Mac II; and a Tektronix 4693DX Color Image Printer.

Circle 143 on reader service card

POSTSCRIPT BAR CODES

Bar Code Generator
for the Mac

Creates Bar Codes
as E.P.S.F. files

Compatible with
Xpress, Illustrator,
Freehand and
PageMaker

Easy to use



MacBARCODA

Choose from many
popular symbologies
including:

UPC, Code 3 of 9,
Interleaved 2 of 5,
EAN and ISBN

We now supply the U.S.
direct with 72 hour
delivery and free telephone
support. We accept VISA
and Mastercard.



ComputaLabel

18a Regent St., Narborough
Leicester LE95DJ U.K.
Phone 011-44-533-750131
Fax 011-44-533-862555

Circle 290 on reader service card

One Of America's Best Run Companies Gives 95% Of Its Money To Charity.

CARE was recently
named the best run,
best managed charity
in America.

We aren't surprised.
95% of every dollar
we receive goes to help
impoverished people.
Only 5% goes to run
our organization.

No other company
could survive on mar-
gins like that. But a lot
of starving people can.

CARE

We're Helping People
Learn To Live Without Us.
1-800-242-GIVE

NAME	Bill Johnson
Hourly rate	7.00
Hours	34
Gross Pay	238.00
FICA deduction	17.87
Federal withholding	25.00
State withholding	6.74
Health Insurance	0.00
Net Pay	188.39

Name	Jane Smith
Street Address	1956 Penwell Bridge Rd
City	Belgrade
State	MT
Zip	59714
Phone	308-4944
Social Security No.	326-92-0115
No. of deductions	1
Hourly Rate	6.00
Employee Number	5
Marital Status	2

Gross Pay Index	Federal Withholding
11220	24.00
11230	25.00
11240	27.00
11250	26.00
11260	30.00

Triple-Index Lookup

FileMaker II can look up a value based on a compound index. Here, a formula in an undisplayed field of the Weekly Payroll Cards file (left window) combines the marital status, number of deductions, and gross pay to form a triple index. FileMaker II looks up that 5-digit index in the Federal Withholding file (lower-right window) to find the appropriate withholding tax. It also gets the employee number from the Weekly Payroll Cards file and looks up that number in the Employee file (upper-right window) to determine the pay rate, marital status, and number of deductions.

enter an employee number and the number of hours worked.

After calculating the 5-digit index, FileMaker II looks it up in a file containing a list of 5-digit numbers and corresponding withholding-tax amounts. If FileMaker can't find an exact match for the 5-digit index number in the table, it uses the next smaller value. For example, the number 11238 (single, one deduction, and \$238 gross pay) isn't in the table, so FileMaker uses 11230. "Triple-Index Lookup" shows sample records from the three files involved.

Christopher Brodin
Bozeman, Montana

.....
We pay from \$25 to \$100 for tips published here. Send tips or questions (include your address and phone number) to Quick Tips, Macworld, 501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702) or MCI Mail (addressed to Macworld). All published submissions become the property of Macworld.

Lon Poole answers readers' questions and offers advice in his monthly Macworld column. Many of the tips he's compiled can be found in his book Mac Insights (Microsoft Press, 1986). More recently he has written the quick reference, HyperTalk (Microsoft Press, 1988).

Fast Statistics.

Because you don't have time to waste.

You don't have time to read a 1000 page manual, to play games, to wade through a pile of confusing menus.

You have lots of data.

You need graphs, tables, financial projections, surveys. The report is due tomorrow and the stat package you thought had everything can't do the job.

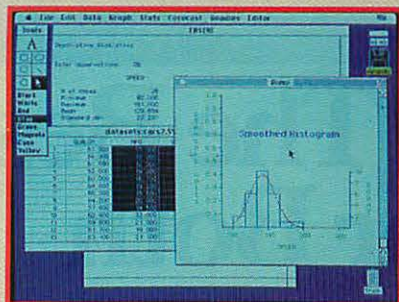
Now you can do it.

The company that brought professionals "the best statistics package on the Macintosh"™ introduces the *easiest*: FASTAT. Designed just for the Macintosh, FASTAT makes high-powered, accurate statistics easy.

You can do dependent and independent t-tests, time series analyses, factor analysis, two-way and n-way tables, correlations, nonparametric tests, regressions, analysis of variance and covariance, exploratory data analysis — even if you've never done them before.

You can also create full-featured graphics such as X-Y plots, bubble plots, line plots, histograms, box-plots, stem-and-leaf diagrams, autocorrelation and time series plots, as well as state-of-the-art displays, like scatterplot matrices.

Some of the graphs are only a click away. Click on a variable name, and you get a histogram or a box plot of the variable. Click on a regression output or a cell in a correlation matrix, and you get a scatterplot of the variables.



Need to customize a graph?

With FASTAT's MacDraw-like tools you can color, draw, add text, and move things.

Need help understanding a statistic?

FASTAT's "pop-up tutor" tells you what the numbers mean.

Need reports?

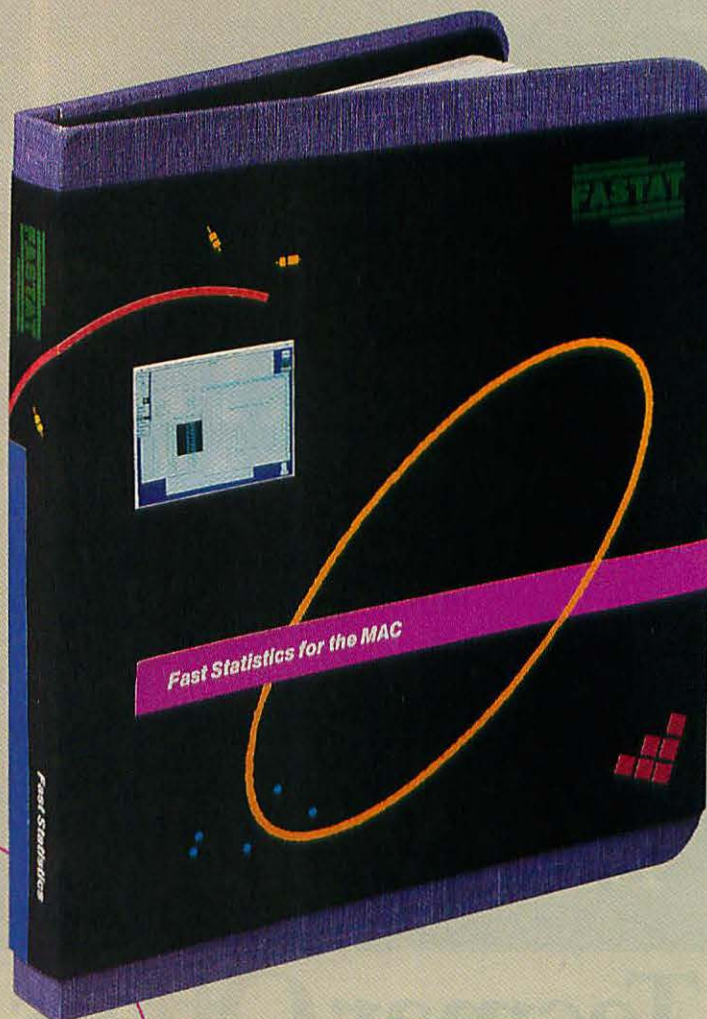
FASTAT's built-in text editor lets you scroll through results, cut and paste, change fonts, add explanatory notes, and save your work.

System requirements: 1 megabyte of memory and hard drive. Mac II version available. Unlimited free technical support.

Dealers circle 492 on reader service card
End users circle 491 on reader service card

3-D and Dynamic Graphics!

Three-dimensional full color scatterplots with surface smoothing, and sophisticated dynamic graphics like scatterplot brushing and movies.



FASTAT

For \$195,** you can stop wasting time.

Systat. Intelligent software.

Call or write for further information:

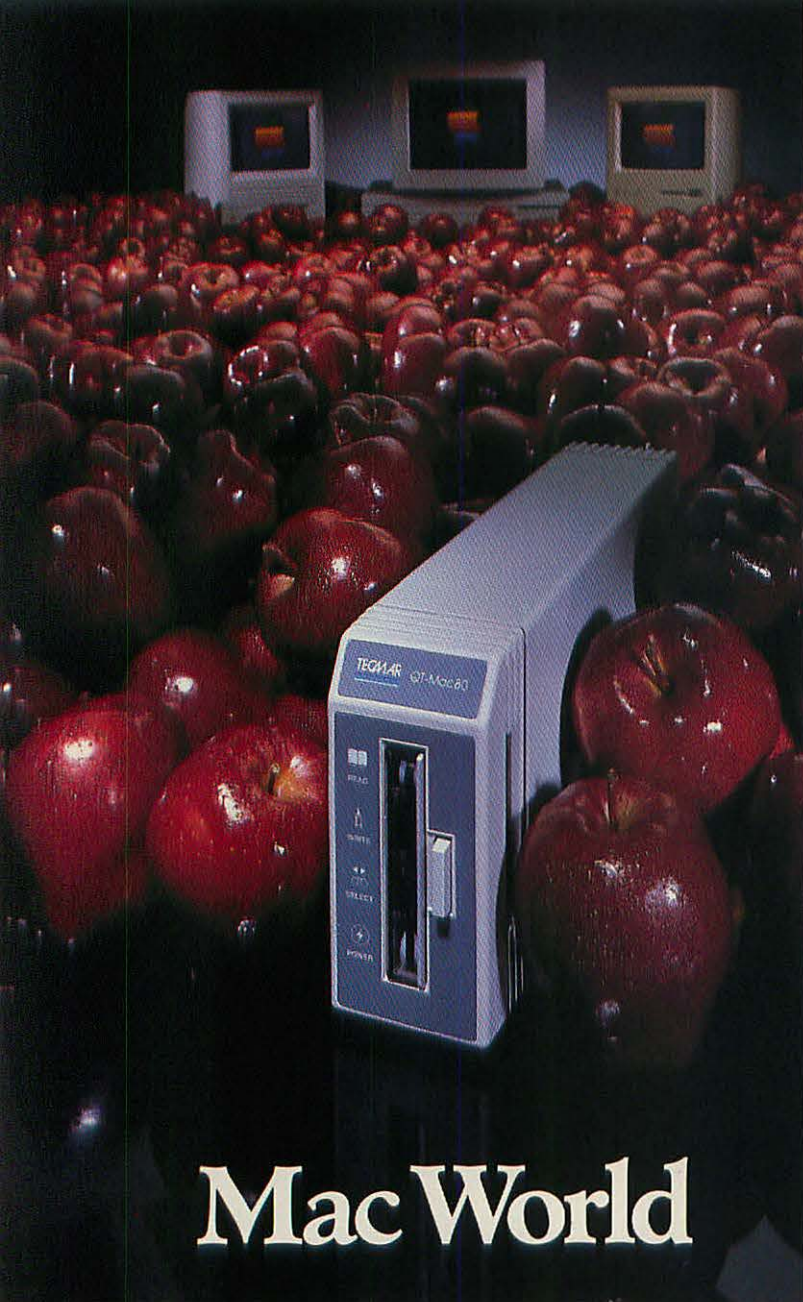
SYSTAT, Inc.

1800 Sherman Avenue, Evanston, IL 60201

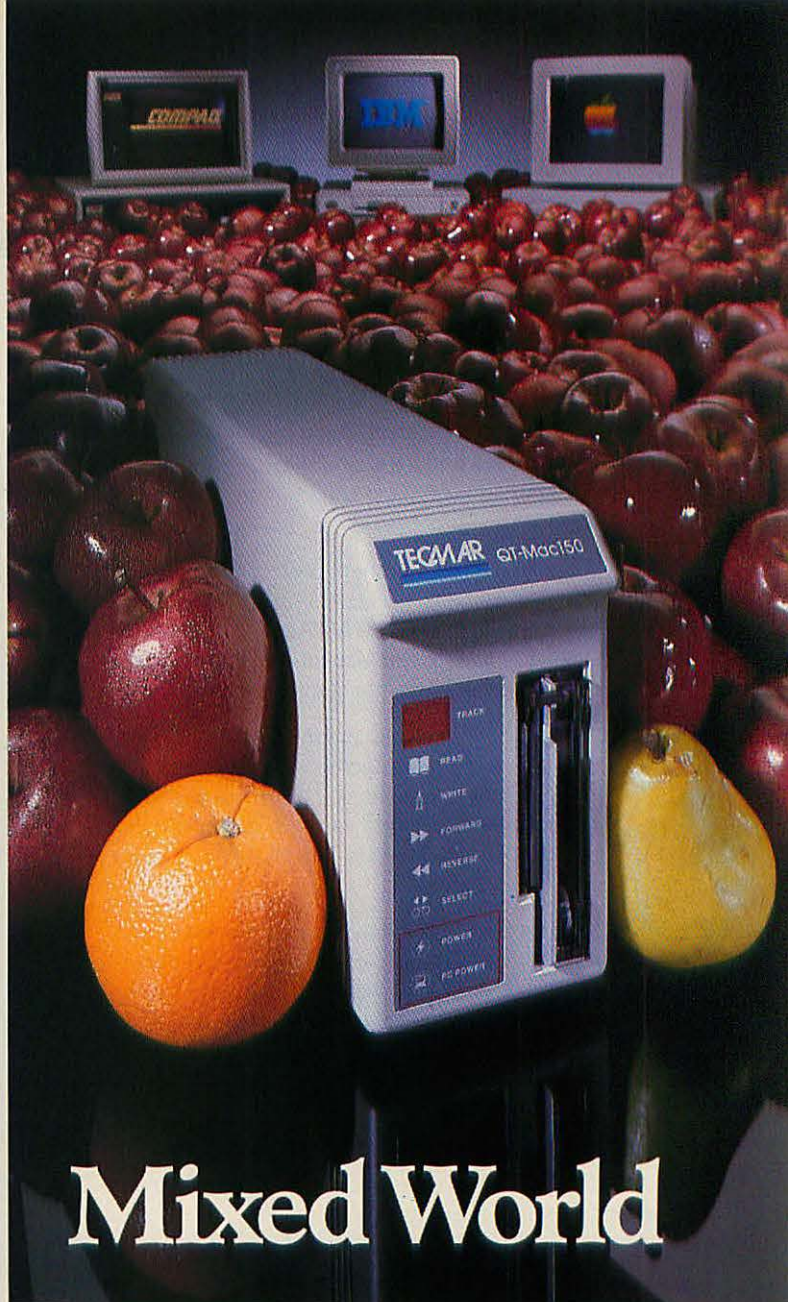
312 864.5670 FAX 312 492.3567

*MacWeek September 13, 1988

**Suggested Retail Price



Mac World



Mixed World

Tecmar Offers You The Best Tape Backup For Both

Regardless of what world you live in, Tecmar delivers the dependable, cost-effective tape backup systems you're seeking.

Mac World

Tecmar's QT-Mac80™ and QT-Mac40™ are the proven choice for SCSI tape backup for the pure Mac environment, with network support for effective backup and archiving under TOPS®, AppleShare® and Novell®. Including our exclusive QuickTurn™ Quality Service and two-year warranty, you couldn't ask for a better Mac tape backup solution.

Applications Guide

	Apple® Macintosh®				IBM®/ Compatibles	
	Plus	SE	II	IIx	PC	PS/2™
QT-Mac40 40MB SCSI	Apple	Apple	Apple	Apple		
QT-Mac80 80MB SCSI		Apple	Apple	Apple		
QT-Mac150* 150MB			Apple	Apple	Apple	Apple
NuLink Interface			Apple	Apple		

*Bundled with NuLink for total MacII solutions. PC and PS/2 host adapter board also available. Call for details.

TECMAR

A REXON COMPANY

Mixed World

We've even bridged the gap between PC Bus, Micro Channel™ Bus and NuBus™ with our new QT-Mac150™ and NuLink™ interface board, which now, for the first time ever, give you a single-drive solution for mixed environments.

So get the best for both worlds. For the name of your nearest dealer, call us today at (216) 349-1009 or toll-free at (800) 624-8560. Tecmar, Inc., 6225 Cochran Road, Solon, Ohio 44139-3377.

All Tecmar products are trademarks or registered trademarks of Tecmar, Inc. Other brand and product names are trademarks or registered trademarks of their respective companies. ©Copyright Tecmar, Inc., a subsidiary of Rexion, Inc., 1989. All rights reserved.

Circle 321 on reader service card

The marriage of Mac and laser printer is a happy one—even if it does require a hefty dowry.

But finding the perfect partner isn't easy. Today's laser printer shopper faces a raft of specifications and technical issues. And now that new system software with enhanced font features is on the horizon, picking a printer will only get harder. This month's column examines the technical processes behind laser printers, and takes a brief gaze into the haze of the future. For a comparison of 16 laser printers, see the article "Paging All Printers," in this issue.

MECHANICS AND ELECTRONICS

A laser printer's output results from a collaboration between an *engine* and a *controller*. The engine is the mechanical half of the duo; it works much like a photocopier. The engine helps determine print quality and speed, and it defines how well the printer can handle different kinds of paper, such as envelopes. The controller determines the printer's typographical features—the range and quality of the fonts, styles, and the sizes it can produce—as well as its compatibility with Mac applications and with other computers. The controller also guides the engine's imaging mechanism, telling it where to apply the *toner* powder that forms the image. And because describing the appearance of a page requires complex calculations,

the controller also helps determine printer speed. In most printers, the controller is housed within the printer's case and contains its

own microprocessor and memory

chips. As I'll explain shortly, however, some less-expensive printers use the Mac's processor and memory as their controller.

WATCH YOUR LANGUAGE

The primary difference between laser printer controllers lies in the type of commands they respond to.

PostScript controllers use commands written in *PostScript*, a programming language created by Adobe Systems for describing the appearance of pages (see "Getting Started with *PostScript*," *Macworld*, December 1987). A *PostScript* controller is a powerful computer in itself. It typically has 2 megabytes of memory or more, a microprocessor, and ROM chips containing the *PostScript* language *interpreter* as well as a selection of *font outlines*, mathematical formulas the controller can use to create text in virtually any size and orientation. Apple's LaserWriter IINT and IINTX are both *PostScript* printers, as were the pioneering LaserWriter and LaserWriter Plus.

QuickDraw printers use the Mac as the controller, so they don't contain the complex controllers that *PostScript* printers require. And because *QuickDraw* printers make the Mac do more of the work, they generally cost less. But they often do less, too. At this writing, two *QuickDraw* printers were available: Apple's LaserWriter IISC and GCC Technologies' Personal LaserPrinter.

THE DIGITAL TYPE FOUNDRY

Their driving language aside, the most important differentiating factor between printers is the *font mechanism*—the techniques they use to produce text. *Outline fonts*, combined with *PostScript*'s wide array of graphics-manipulation commands (called *operators*), give *PostScript* printers tremendous typographic versatility (see "Outlines versus Bitmaps"). Need a 10-foot-high *W* filled with a checkerboard pattern? Want to produce a record label with the musician's name set in a circle? With a shadow behind it? Chores like these are a cinch for *PostScript*.

QuickDraw printers aren't as typographically talented. The LaserWriter IISC uses the Mac's bitmapped screen fonts to

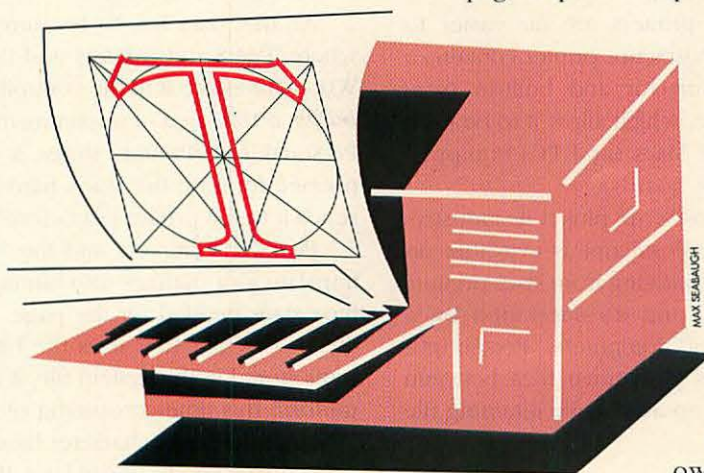
(continues)



Getting Started with Laser Printers

How they work, and
what to look for when
you're shopping for one

by Jim Heid



print text, and therefore can produce only those type sizes that are installed in your System file. (Apple's System 7.0, due to debut next year, will change that by providing outline fonts for the screen and for QuickDraw printers; see "Caution: Outlines Ahead.") Moreover, the LaserWriter IISC can't stretch or apply patterns to text.

GCC's Personal LaserPrinter handles type much like a PostScript printer. The PLP uses outline fonts (stored on a hard disk), which allow it to create text in virtually any size; but because QuickDraw lacks PostScript's wide array of graphics operators, the PLP still can't produce all the special text effects of its PostScript competitors. You can also supplement a PostScript printer's built-in, or *resident*, fonts with *downloadable* fonts, whose outlines are stored on disk and downloaded to the printer's memory before printing.

THEY DON'T SHARE ALIKE

The differences between printer-driving languages are also important if you plan to share a printer with other computers. Since QuickDraw is confined to Macs, you can't use a QuickDraw printer with an IBM PC or clone. And because QuickDraw printers attach to the Mac's SCSI port, they can't be shared on a network. (You can, however, put a Personal LaserPrinter on a

CAUTION: OUTLINES AHEAD

A major shortcoming in the Mac's current font mechanism is its reliance on bitmapped screen fonts. For example, to print smooth 18-point text on a LaserWriter IISC you need a 72-point font as well as an 18-point font in your System file, since the driver reduces fonts to a fourth their size before printing.

All this will change with System 7.0, which will provide outline fonts for the screen, allowing Macs to produce smooth text in any size. Instead of the jagged-edged characters you see when choosing a size that isn't in the System file, you'll see smooth, well-formed characters. (If you have a large investment in bitmapped screen fonts, don't worry; System 7.0 will be able to use them too.)

The LaserWriter IISC will be able to produce high-quality text in virtually any size.

Programs that let you view documents in various magnification scales will display sharp—not jagged—text in all viewing scales.

Also, the new fonts will work together with a new system software component, the Layout Manager, to provide more consistent character positioning from one type of printer to another. This should allow you to use

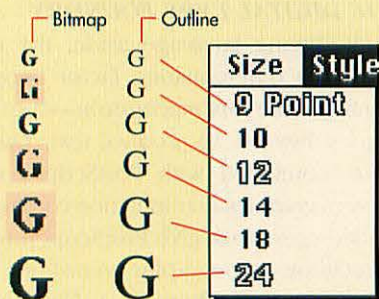
inexpensive printers such as ImageWriters as proofing devices for documents destined for PostScript printers.

What About PostScript?

Which brings up the question, where does all this leave PostScript printers? Well, in more or less the same place. Under System 7.0, when you use a font for which a PostScript outline font exists, the Mac will use the PostScript font, just as it does now. However, to use Apple outline fonts on a PostScript device, you'll need to translate them into downloadable PostScript fonts using an Adobe utility currently under development.

The fact that PostScript printers can be shared on a network still makes them the printers of choice for offices, especially those using both Macs and PCs. And Adobe's forthcoming Adobe Type Manager utility will allow users of PostScript printers to create outline screen fonts for the thousands of PostScript fonts that currently exist. Since many of these fonts may not be available in Apple's outline format for some time—if ever—Adobe Type Manager is likely to be valuable even after System 7.0 ships.

OUTLINES VERSUS BITMAPS



Because outline fonts are mathematically described as a series of lines and curves, a laser printer can produce them in virtually any size. Bitmap fonts, described as a series of bits, require a separate bitmap for each type size. Sizes that don't exist in the System file must be scaled from available sizes, producing jagged characters such as those highlighted here.

network using GCC's PLP Share, a \$499 hardware add-on.)

PostScript printers are far easier to share. Every PostScript printer contains a LocalTalk connector and built-in *print server* software, which allow it to be used with up to 32 Macs (and PCs equipped with LocalTalk boards).

Another PostScript plus is its industry-wide support. PostScript is available on output devices ranging from laser printers to typesetters, and it's supported by a wide range of computers. PostScript's popularity lets you move files between printers or computers while retaining file formatting.

FROM SCREEN TO PRINTER

Every page must ultimately be described as a *bitmap*—an array of bits, each corresponding to one dot on the page. A full-

page bitmap for a 300-dots-per-inch printer is roughly 1MB in size.

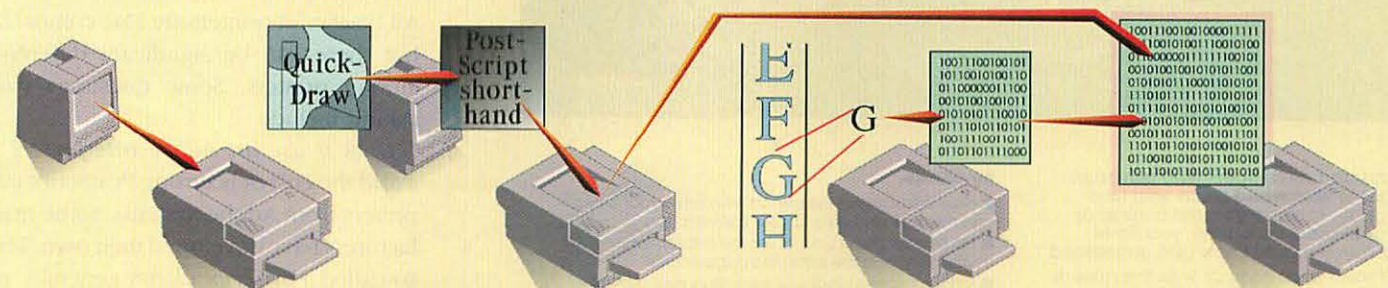
All that data has to be stored somewhere. PostScript printers and the LaserWriter IISC store it in the controller's *page buffer*, a 1MB area of printer memory. The Personal LaserPrinter stores it in compressed form on the Mac's hard disk and sends it to the printer just before printing.

PostScript printers and the PLP must translate font outlines into bitmaps in the type sizes needed for the page. Because the LaserWriter IISC uses the bitmapped fonts stored in the System file, it need not perform this time-consuming process.

Because some character bitmaps will probably be needed again later, PostScript printers and the PLP store them in an area of memory called the *font cache*. Retrieving a character bitmap from the font cache is much faster than creating a new one

PRINTING APPROACHES COMPARED

POSTSCRIPT PRINTERS



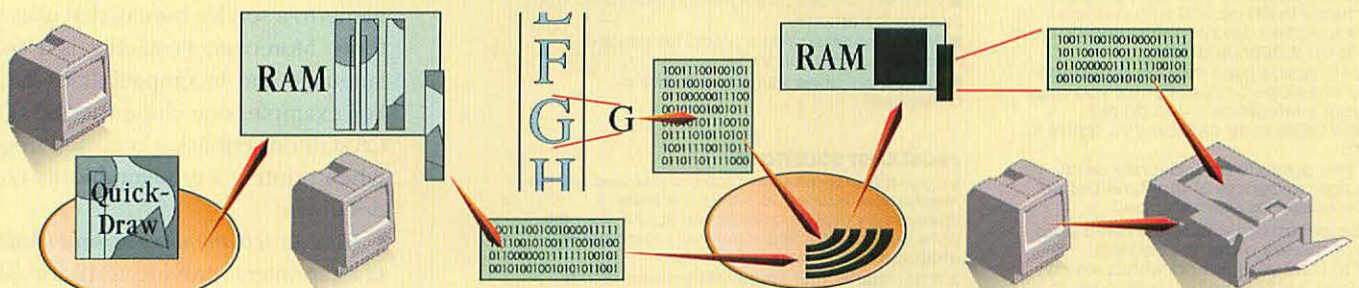
If LaserPrep is not present in the printer's memory, the Mac downloads it, preparing the printer for PostScript shorthand commands.

The LaserWriter driver translates the QuickDraw description of the page into PostScript shorthand and sends it to the printer.

The printer's controller uses font outlines to create font bitmaps in the required sizes and stores them in the printer's font cache for future use.

The controller prepares a bitmap of the page, stores it in the page buffer, then directs the engine to print, using the page bitmap as a guide (see "Inside an Engine").

GCC PERSONAL LASERPRINTER



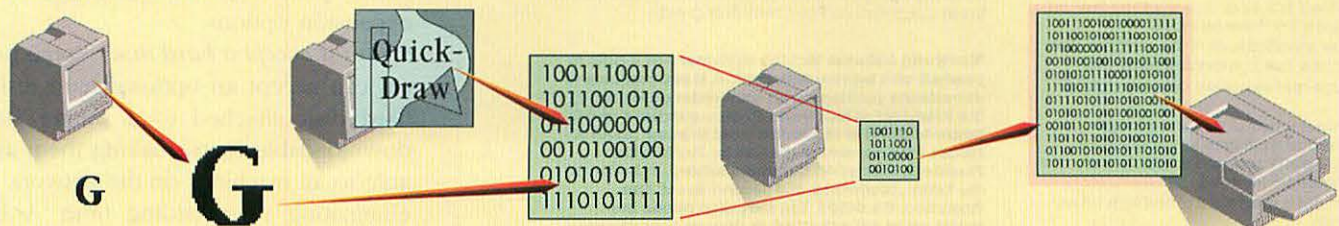
First, the PLP driver saves the QuickDraw page description on disk. Then the driver divides the page into sections called bands.

The driver prepares a 300-dpi bitmap of each band one-by-one, compressing and storing it on disk. Font bitmaps are generated from font outlines, as needed, and stored in the font cache in RAM.

The PLP driver then reads all the compressed bands and assembles one compressed bitmap of the entire page, all in the Mac's memory.

The driver then decompresses the page and sends it to the printer, timing the data transmission to match the rotation of the drum.

LASERWRITER IISC



The IISC driver looks in the System file for fonts that are four times the size to be printed. If it doesn't find them, it uses actual-size fonts, which look jagged when printed.

The IISC driver creates 300-dpi bitmaps of any object-oriented graphics.

The driver scales bitmapped graphics and type bitmaps to 300 dpi and sends them over to the printer's page buffer as they are prepared.

When the entire bitmap for the page is in the page buffer, the page is printed.

MAIL-ORDER CONSUMERS DO HAVE RIGHTS

The vendors and developers who advertise in the pages of **Macworld** share with us a common goal—to serve **you**, the consumer. And as a mail-order consumer, you have certain rights you should know and understand. Mail-order sales must comply with the rules of the Federal Trade Commission (FTC) and various state laws. Here are some guidelines to alert you to your rights and help you shop by mail more effectively.

THE FTC MAIL ORDER RULES STATE:

1. The Seller must ship your order within 30 days of receiving it, unless clearly stated otherwise in the advertisement.
2. If the Seller cannot ship your order when promised, you must be notified in writing prior to the promised date. The notice must specify a new date if available, and must give you the opportunity to (a) cancel with a refund, (b) agree to a specified delayed shipping date, or (c) agree to an indefinite delay.
3. The Seller's notice must include a postage-paid reply envelope or card so that you may indicate your preference. If you do not respond, the Seller may assume you agree to the delay.
4. Even if you agree to an indefinite delay, you retain the right to cancel at any time before the merchandise has been shipped.
5. If you cancel an order that has been paid by check or money order, the Seller is obligated to mail your refund within seven business days. If you paid by credit card, the Seller must credit your account within one billing cycle following receipt of your cancellation. Store credits or vouchers are not acceptable in place of a refund.
6. If the item you order is unavailable, the Seller may not send you substitute merchandise without your consent.

DO'S AND DON'TS

By mail:

- Compare prices, including sales tax and shipping fees, before you order. Your purchase may be exempt from sales tax—check your state laws on collection regulations. Handling, packing, and shipping fees are legal and most states tax these services.
- State the precise specifications of the merchandise, such as model, make, size, component parts, etc.
- Confirm the price and expected delivery date as advertised.
- State on your order whether you will accept substitute merchandise if the item you specified is unavailable. If you won't accept a substitute, state that your payment should be returned.
- Record of payment is essential if a problem arises, so do not send cash.
- Keep copies of your order and all associated correspondence. Your records should include the company's name, address, and phone number, a description of the merchandise, your canceled check or money-order carbon, the date you mailed the order, and any sales slips and shipping receipts.
- Do not insure your order. It is the Seller's responsibility to make sure you receive your merchandise.

By phone:

- Note the name of the person who takes your order, and the time and date of your conversation.
- Make a record of your order, the price, promised availability, and the expected components.
- Save all correspondence, including your canceled check or money-order carbon and any written confirmation sent by the Seller.

Questions to ask:

- Does the advertised merchandise include all necessary parts and accessories? Are they made by the same manufacturer? Is the version number or model number the same? Is the product compatible with the hardware/software you intend to use it with?
- Can your order be shipped immediately? If not, when will it be available for shipping?
- Has the advertised price increased?
- What warranties does the merchandise carry? Who provides the service?
- What is the Seller's return policy? Exchange or repair? The refund policy?
- If a problem arises, with whom should you correspond?

PROBLEMS? SOLUTIONS:

1. If you do not receive your order as promised or if the merchandise is defective, write to the Seller immediately. Include a description of your order, the price, date, and account number or order number if available. Keep a copy of your letter.
2. If you register your complaint by phone, send a follow-up letter to confirm and keep a copy of it.
3. If you think the merchandise is defective, review your product instructions and warranty carefully. Make sure you expect only those features and abilities that the product is supposed to have. Then contact the Seller for procedures. Do not return the merchandise until you have been instructed to do so.
4. If you return the merchandise, keep the shipper's receipt or packing slip. Your right to reimbursement of postal costs is determined by store policy.
5. If you have discussed your problem thoroughly with the Seller and remain dissatisfied, write to the consumer complaint agency in the Seller's state. If you paid for the merchandise by credit card, you may have the right to withhold payment under the Federal Trade Commission's Fair Credit Billing Act.

Macworld believes that the customer has a right to product and service satisfaction. If you continue to experience problems with mail-order purchasing, the President of Macworld Communications and the Editor-in-Chief of Macworld want to know about it. Please take a moment to write to: Jim Martin, President, Macworld Communications, or Letters to the Editor, Macworld, 501 Second Street, San Francisco, CA 94107. You may also phone the President at 415-243-0505 to discuss your situation. Our goal is to help you become a satisfied mail-order consumer.

MACWORLD
The Macintosh® Magazine

from the outline. On a PostScript printer, a fixed amount of memory is reserved for the font cache. The PLP creates a font cache in the Mac's memory; its size depends on how much memory the Mac has.

OTHER POSTSCRIPT ISSUES

All PostScript printers are Mac compatible, but there can be significant differences among printers. Some questions worth asking include

■ *Does it use an Adobe interpreter?* To avoid the cost of licensing PostScript interpreters from Adobe Systems, some manufacturers have developed their own. These so-called *PostScript clones* generally provide faster performance, but at a price: although they can generally use downloadable fonts from other firms, such as Bitstream and Casady & Greene, they can't use Adobe's downloadable fonts, which are encrypted in a format only an Adobe interpreter can read. This can be a serious drawback if you plan to take your documents to a service bureau that uses Adobe fonts. Moreover, PostScript is a complex language and incompatibilities can arise. For example, one clone I tested (Qume's CrystalPrint Publisher) crashed frequently when printing a typographically complex document.

■ *How much memory is provided?* Most laser printers provide 2MB or 3MB of memory, divided into three areas: the page buffer, the font cache, and *virtual memory*, or *VM*—general work space that also holds downloadable fonts. The more memory a printer provides, the larger its font cache and VM. A larger font cache means faster performance, and more VM means more room for downloadable fonts. Many printers also accept memory-expansion options.

■ *Can it accept a hard disk?* Some printers can accept an optional hard disk. A hard disk attached to a printer stores downloadable fonts, making them available to all machines on the network and eliminating downloading time. A hard disk also acts as an extension to the font cache, which further improves printer performance.

■ *Can it imitate other printers?* Older software for IBM PCs and other computers may not support PostScript, but it gener-

The image displays three different types of Random Access Memory (RAM) modules against a red background. At the top is a large DIMM (Dual In-line Memory Module) with a green PCB and numerous gold-plated pins along its edge. Below it is a smaller DIMM, also with a green PCB and gold pins, featuring a white label. At the bottom is a SODIMM (Small Outline DIMM), which is the smallest of the three, with a green PCB and gold pins, and a white label. All three modules are populated with multiple black integrated circuit chips.

MacIIx-Compatible

**Mac II, SE, SE/30 & Plus-
Compatible**

Call 1-800-CLEARPT

Three VHS tapes of Star Trek: The Motion Picture are shown. The one in the foreground is 'The Motion Picture' itself, with its distinctive gold and black cover. Behind it are two other tapes, likely from the same collection, one showing a Starship Enterprise and another showing a Starship Enterprise in space.



CLEARPOINT

35 Parkwood Drive
Hopkinton, MA 01748
(508) 435-2000

Telex: 298281 CLEARPOINT UR
EUROPE Clearpoint Europe B.V.
Tel: 31-23-273744 Telex: 71080 CLPT NL
CANADA Clearpoint Canada 416-620-7242
JAPAN Clearpoint Japan KK 03-221-9726

INSIDE AN ENGINE

Legend:

- Attracts toner (Yellow)
- Repels toner (Blue)

Diagram Labels:

- A:** Image exposure area
- B:** Toner compartment
- C:** Write-black and Write-white processes
- D:** Developing cylinder
- E:** Developing cylinder surface
- F:** Toner application
- G:** Cleaning blade
- H:** Heat rollers
- I:** Discharge brush

Inset Details:

- Developing cylinder surface:** Shows toner particles being attracted to the drum.
- Photosensitive drum surface:** Shows the drum's surface with toner particles.
- Write-black:** Shows a black area on the drum.
- Write-white:** Shows a white area on the drum.

Text:

With the bitmapped image of the page as a guide, the engine uses a light source (usually a laser) to expose its photosensitive drum or belt (A). In a write-black engine (shown here), the exposed areas (those to be printed) have an electrical charge that attracts toner as the drum rotates past the toner compartment (B). In a write-white engine, the exposed areas (not to be printed) have a charge that repels toner. Because areas exposed by the laser beam do not completely overlap, write-black engines usually produce less solid blacks than do write-white engines (C). When the drum meets the developing cylinder (D), charged toner particles are attracted to areas of the drum that have the opposite charge (E). An electrically charged wire attracts toner from the drum onto the paper (F). After a discharge brush removes all electrical charges from the paper (G), heat rollers fuse toner to the paper (H). A second wire neutralizes the drum's electrical charge (I) so the drum may be written to again.

MACWORLD • OCTOBER 1989

GETTING STARTED

HOW TO

white, and toner is attracted to the unexposed areas.

Write-white engines tend to produce richer blacks than write-black engines, but they don't print fine lines or small text as well. But even within a category, print quality can vary dramatically. For example, the Canon SX engine in Apple LaserWriters produces much richer blacks than the Ricoh 1060 engine that several other printers use, yet both are write-black devices.

▪ **Engine life** If you churn out hundreds of copies of documents or share a printer in a busy office, you need an engine designed to take a beating and keep on feeding. A LaserWriter's engine is rated for 300,000 pages; the Ricoh engine in QMS's PS-1500 is rated for 1.5 million pages. You should probably have an engine overhauled when it reaches its engine-life rating.

▪ **Paper handling** The features an engine provides for storing and feeding paper break down into several categories: maximum page size (usually 8½ by 14 inches); paper capacity (from 100 to 1000 sheets);

number of paper trays (usually one, sometimes two); and manual-feed features. If you plan to feed envelopes or other nonstandard paper sizes frequently, look for a printer that offers a *self-centering* manual-feed slot. Such slots use two adjustable guides; move one, and the other moves accordingly.

PICKING YOUR PRINTER

Should you buy a PostScript printer? Will a clone suffice? Or should you gamble and buy a QuickDraw printer on the hopes that System 7.0 will give it similar typographic skills?

If you need to share a printer—especially between Macs and PCs—go for PostScript. I would be wary of PostScript clones, however, until their font libraries grow and their compatibility wrinkles are ironed out.

As for the QuickDraw camp, it's too early to tell whether System 7.0's outline fonts will provide the same typographic quality as Adobe's. Nor is it certain yet how the Mac's new outline fonts will fit into the typesetting world. Will you be

able to create a document using QuickDraw outline fonts and then print it on a PostScript-based typesetter? Will line endings and character widths match? Will the fonts themselves look the same? Will a slew of incompatibilities threaten the relative tranquillity that the Mac printer world has enjoyed up to now?

We won't know until System 7.0 meets the real world. And that brings up a bigger question: Should you wait to buy a laser printer? I say no, especially if your needs dictate PostScript. System 7.0 will give QuickDraw printers improved typographic features, but it won't send PostScript printers to the breadlines. When it comes to maintaining consistent document formatting across different printers and computers, PostScript excels. That isn't going to change. ■

Jim Heid is a Macworld contributing editor who is currently writing an advanced guide to the Macintosh, to be published this fall by Brady Books. This is his 50th consecutive Macworld column.



Insurance For Fried Apples?

When your surge protector fails will your insurance save you? SAFEWARE® computer insurance covers power surges, lightning, theft, fire, accidental damage and more! Full replacement of hardware, media and purchased software for as little as \$39 per year.

Total Value, Hardware, Media & Purchased Software	Annual Premium
up to \$2,000	\$ 39
\$ 2,001-\$ 5,000	\$ 69
\$ 5,001-\$ 8,000	\$ 89
\$ 8,001-\$11,000	\$109
\$11,001-\$14,000	\$129

For immediate coverage, information
and rates on higher coverages, call

1-800-848-3469

Locally 614-262-0559 On Compuserve, GO SAF

SAFEWARE

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., P.O. Box 02211, Columbus, OH 43202

Circle 293 on reader service card

HOW DO YOU GET A JOB WITHOUT EXPERIENCE? AND HOW DO YOU GET EXPERIENCE WITHOUT A JOB?

Most young people have one answer to this problem. They avoid it until they're out of college. But they could be getting solid work experience while they're still in college. With your company's help. And ours.

We're Co-op Education. A nationwide program that helps college students get real jobs for real pay, while they're getting an education.

But we can't do it without you. Those real jobs have to

come from real companies. Like yours.

For more information on how you can participate in this valuable program, write Co-op Education, Box 775E, Boston, MA 02115.

Not only will you be giving students a chance to earn money and pick up the most valuable kind of knowledge, you'll be giving yourselves a chance to pick up the most valuable kind of employee.

Co-op Education.

You earn a future when you earn a degree.



A Public Service of This Publication ©1987 National Commission for Cooperative Education

DR MAC



Call now for
orders and
free catalog

1-800-825-MACS

FAX • 1-818-501-3760

1-800-825-6227

Examine Us !

Dr. Mac has the lowest prices.



Check this symbol for
Dr. Mac's special
prescriptions.

MONEYBACK

Most of our products have
a 30 day money back
guarantee. Please inquire
when you call.

GUARANTEE

DR. MAC PRESCRIBES THE BEST

SOFTWARE

3G GRAPHICS	
Images with Impact: Graphics	53
Images with Impact: Business	64
ADOBE SYSTEMS	
Adobe Illustrator '88	289
StreamLine	225
Fonts	Please Call
AEC MANAGEMENT SYSTEM	
AEC Info Manager	409
FastTrack Schedule	113
ALDUS	
Pagemaker	389
Freehand 2.0	339
Persuasion	359
ALTSYS	
Fontastic Plus 2.0	54
Fontographer	215
ALSOFT	
DiskExpress	45
Master Juggler	56
ASD SOFTWARE	
Fileguard	119
BEDFORD SOFTWARE	
Simply Accounting	199
BREKTHROUGH PROD.	
Market Master - Helps you sell	199
CAERE	
OmniPage 2.0	539
CENTRAL POINT	
Copy II Mac	25
PC Tools Deluxe Mac	48
CENTRON SOFTWARE	
Casino Master	42
Casino Master Color	49
CE SOFTWARE	
QuickKeys	64
Disktop	27
Quickmail 2.0	129
Quickmail 2.0 Ten User	229
CLARIS	
MacDraw II	319
FileMaker II	235
DATA VIZ	
MacLink Plus	129
Translators	111
MacLink Wang VS	291
MacLink - European version	149
DENEBA	
Canvas 2.0	172
Coach Professional	114
Coach Professional Network	253
DESIGN SOFTWARE	
MacTree+ Includes DS Backup	36
DISCOVERY SOFTWARE	
Chroma 32	Call
Arkanoid	24
DMA	
MacTerm	75
DREAM MAKER SOFTWARE	
Cliptures Vol 1 or 2	69
MacGallery	26
ELECTRONIC ARTS	
Studio 8	289
Studio 1	89
EMERALD CITY SOFTWARE	
SmartArt 1.2 or 3	82
LaserTalk	159
FIFTH GENERATION	
Suitcase	44
Fastback II	113
FOX SOFTWARE	
FoxBASE +/ Mac 2.0	255
FoxBASE +/Mac Multiuser	355
FoxBASE + Runtime / Mac	155
HAYES	
Smartcom II	85
Smartmodem 9600 V series	975
INFORMIX	
WingZ	255
INFOSPHERE	
MacServe	140
LaserServe	53
LaserServe 5 Pak	166
Liason	166
INNOVATIVE DATA DESIGN	
Dreams	265

QUARKXPRESS Version 2.11 \$469
QUARKXPRESS is the top-of-the-line professional publishing software. In one package it combines full featured word processing and excellent graphics handling with the most sophisticated page design, layout & color specification tools. Use it to produce everything from top quality corporate brochures, annual reports & newsletters to manuals, tabloids & magazines.

INSIGHT DEVELOPMENT	
MacPrint	79
INSIGNIA	
Soft PC	245
INTUIT	
Quicken	29
JAM SOFTWARE	
Smart Alarms	53
Multi-User (2 to 4)	106
KENT MARSH	
MacSafe	85
Nightwatch	85
LANGUAGE SYSTEMS	
Fortran with MPW	298
LAYERED	
Insight Expert Accts Rec.	405
Insight Expert Gen. Ledger	405
Insight Expert Inventory Control	405
At Once	289
LEXPERTISE	
MacProof	117
MECA	
Managing Your Money	120
MICROSOFT	
Word 4.0	247
Excel	247
File 2.0	137
Works	195
PowerPoint	247
MICROLYTICS	
Goler	42
Word Finder	42
MONOGRAM	
Business Sense	266
Dollars & Sense	88
ODESTA CORPORATION	
Double Helix New version 3.0	310
Double Helix II Multi User	275
GeoQuery	189
Data Desk Professional	275
OLDUVAI	
Read It	249
PARACOMP	
Swivel 3D	245
Model Shop	369
PRO PLUS	
Wall Street Investor 3.1	445
QUARK	
XPress 2.11	469
Style	169
SILICON BEACH SOFTWARE	
Super Paint 2.0	125
Digital Darkroom	259
SuperCard	129
SOFTWARE VENTURES	
Microphone II	215
SYMANTEC	
Think C 4.0	148
LightSpeed P	89
SAM	59
Symantec Utilities	62
More II	246
TRAVELING SOFTWARE	

Lap Link Mac	79
T - MAKER	
Write Now 2.0	105
TOPS	
TOPS for Mac	135
TOPS for DOS	109
TOPS Flashcard	156
TOPS Flashbox	115
TOPS Repeater	124
Teleconnectors	26
Inbox Starter Kit	189
Netprint	114
WOLFRAM	
Mathematica for SE	418
Mathematica for Mac II	696
WORDPERFECT CORP.	
Wordperfect	185

HARDWARE

ABATON	
Interfax Fax-modem	314
Quick Step Printer	3049
256 Grey Scale Scanner	1479
AOX	
DoubleTime-16	239
CUTTING EDGE	
CE 800K Disk Drive	139
DATADESK	
Mac - 101 Extended Keyboard	139
DAYSTAR DIGITAL	
25/030 Accelerator II / IIX	1749
33/030 Accelerator II / IIX	2949
33/030 Accelerator SE	2295
40/030 Accelerator II / IIX	3596
50/030 Accelerator II / IIX	3999
Math Coprocessors available	Call
MC LocalTalk Interface Board	315
DAYNA COMMUNICATIONS	
3.5" Drive 1.44 M	499
DOVE COMPUTER CORP.	
030 Marathon 32 Mhz	999
E MACHINES	
Monochrome for SE	1229
Monochrome for Mac II	1299
Color 19 inch	4565
EMAC	
Emac 20 D	499
Emac 40 Impact Plus - 19ms	689
Modem 2400 Baud with cable	205
Tape Back up 150T	999
FARALLON COMPUTING	
MacRecorder	132
PhoneNET PLUS	33
PhoneNET PLUS (10 Pack)	219
PhoneNET Star Controller	1099
PhoneNET Punch Down Kit	66
Timbuktu	64
Timbuktu Remote	189
FUJITSU	
Laser Printer	3149
GENERAL COMPUTER	
Write Move	514
PLP Laser Printer Plus	1675
Business Laser Printer	3149
IRWIN	
Accelerator 25 Mhz	1199

KINETICS	
Ether Port SE 30L	593
Ether Port SE/030	593
Ether Port II	517
Fast Path 4	2084
LA CIE	
Cirrus 40 Meg	695
Cirrus 80 Meg	995
Cirrus 100 Meg	1025
MEGA GRAPHICS	
19" Rival Monochrome SE/II	1175
19" 256 Greyscale System	2122
19" Sony Color System II, IIX	3999
19" Sony Color System SE 30	4462
MICROTECH	
45 Meg Removable Hard Drive	1059
MICROTEK	
Flatbed 256 GS 300DPI	1635
Color Scanner	Call
NEC	
Macsync	599
ORCHID TECHNOLOGY	
MacPrint II	239
MacFax/Modem 9600 Baud	444
PERIPHERAL LAND	
30 Turbo Effective access 14ms	599
50 Turbo - 14ms	699
Infinity 40 - 10ms	1175
TurboFloppy 1.4	349
Large Capacity Drives	Call
POLAROID	
Data Rescue Disks (10 pack)	18
PRACTICAL PERIPHERALS	
2400 Baud External Modem	177
Mac Comm. Pac 2400	219
RASTEROPS	
ColorBoards	Call
SHIVA	
NetBridge	343
Net Modem	323
NetModem V2400	432
NetBridge	343
SIGMA DESIGNS	
Pageview	799
Silverview	1499
ColorMax	3943
SUPRA	
2400 Baud External Modem	138
SYSTEMGATE	
Floppy Drive 800K	145
TARGUS	
Mac Plus/SE Carry Case	56
Mac SE Ext. Keyboard Case	69
Imagewriter II Carry Case	46
THUNDERWARE	
ThunderScan 5.0	183
Lightning Scan	399
SIMMS	
1 Meg. 100 ns	Call

POLICIES

- Visa, Mastercard, and AMEX accepted.
- Credit card is not charged until order is shipped
- California residents add 6.5% sales tax
- To order call Mon - Fri, 9 - 10 EST. Sat Noon - 5 EST.
- Enquiries call (818) 501-6581, FAX# (818) 501-3760
- All prices & policies subject to change without notice.

Shipping

- \$3. UPS Standard Air/Blue. Hardware over 10 lbs will be shipped ground.
- Same day shipping on orders placed by 8:45pm EST, if items are on hand.

Returns

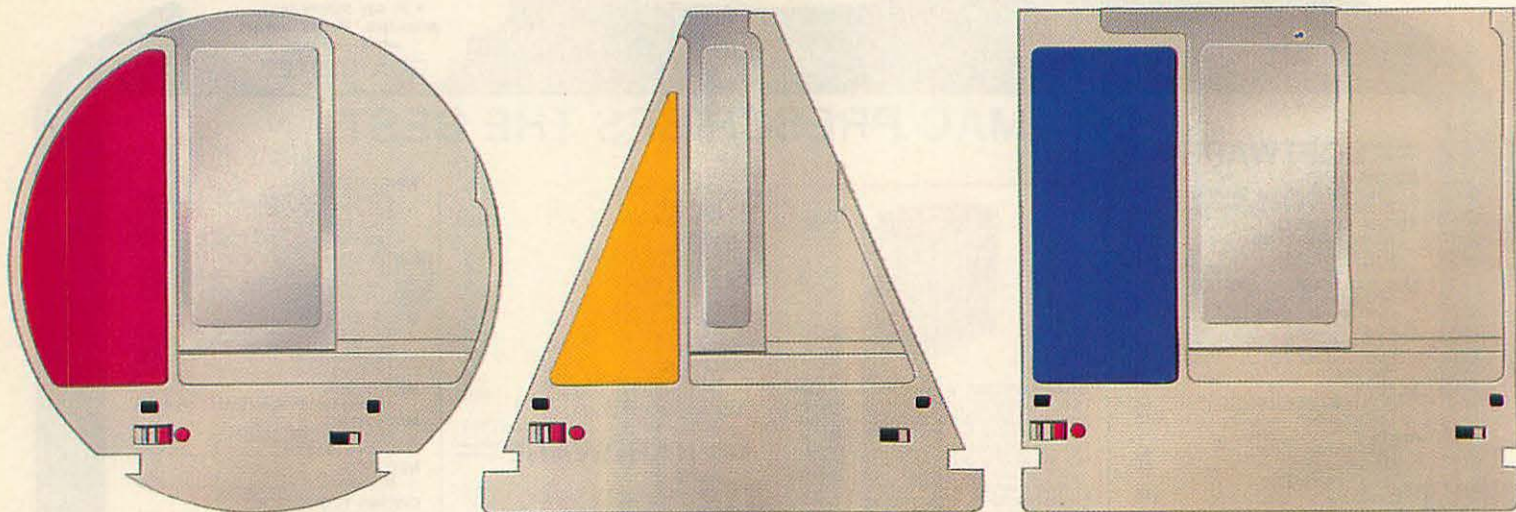
- Defective software only will be replaced immediately by the same item. Call (818) 501-0861 for R.A. number before return. A restocking fee may apply.

Dr. Mac Inc.
14542 Ventura Blvd., Suite 200
Sherman Oaks, CA 91403

Fax Your CORPORATE, EDUCATIONAL & INTERNATIONAL ORDERS NOW

30 Day approved credit

Do You Have The Standard...



The Infinity Optical Disk

You may not know that there is an ISO-standard for optical storage. This compatibility standard is essential for data interchangeability between second source vendors.

But some companies have jumped on the "optical bandwagon" with no knowledge of removable technology and have come out with non-standard devices.

Fitting a non-standard optical disk into another drive is like fitting a square peg in a round hole.

Luckily, there is one peripheral company that has been making removable drives since 1985 — PLI. And now the removable experts at PLI have introduced the Infinity Optical.

The Infinity Optical combines unlimited storage capacity and Sony reliability with optical rewritability and the convenience of removability.

"Data hungry," large scale applications are no problem with a 650 MB or 1.3 Gigabytes drive. And four FREE utilities: TurboCache, TurboBack, TurboOptimizer and TurboSpool; give you the fastest optical drive available.

Interface kits are available for Macintosh and IBM-XT, AT, PS/2, compatibles and AUX.



Sony, IBM, XT/AT/PS/2, are trademarks of their respective companies.

For a Dealer nearest you call ...
(800) 288-8754

 **PLI**
PLI MWORLD AD-06

Peripheral Land Incorporated
47421 Bayside Parkway, Fremont CA 94538
(415) 657-2211 • FAX (415) 683-9713

Circle 214 on reader service card

Insights on Excel 2.2

Getting the most
out of 2.2's
new features

by Charles Seiter

Competition from the newer, feature-loaded programs Wingz and Full Impact has forced Microsoft to add some much-requested capabilities to its newest version of Excel, while other features (3-D graphics, in particular) are nowhere in evidence. The main changes from version 1.5 include more keyboard shortcuts, direct links to Word and other programs, improved text and chart formatting, and enhanced macros. (A bug affecting formula references has been discovered in early copies of Excel 2.2. For more information, see *Mac Bulletin* in this issue.)

ALL KEYED UP

Excel 2.2 offers more than 200 keyboard commands, but not all of these are necessarily easy to learn or convenient to use, unless perhaps your mouse is out of order. One particularly useful set consists of keyboard commands for text enhancement (see "Fast Formats"). These are not only easy to memorize, they also represent, in most cases, new style options for Excel. Here are some other quick options you may find useful:

⌘-~ This one's easy to remember—the two keys are next to each other left of the space bar on standard SE and Mac II keyboards. This combination toggles your worksheet between a view of the values and a view of the worksheet formulas.

⌘-Option-0 If you mark a range or a cell and press this combination, you get a border around the selection. **⌘-Option-(Arrow Up)** underlines all items in a selected area.

/ Perhaps included for nostalgia's sake for former Lotus 1-2-3 users, this key nonetheless makes it possible for you to manage every aspect of Excel without touch-

ing the mouse. When you press **/**, the menu bar displays little underlines to indicate which letter activates which menu. **⌘-click** This combination automatically inserts new cells. If you select a row, ⌘-

click inserts a new row above it; select a block of cells, and it inserts a similar block. Conveniently, the new block keeps the old block's formatting.

Arrange All and Double-Click The Arrange All command under the Window menu shows you little views of all open worksheets, macros, and charts (see "A Convenient Arrangement"). When you double-click on the title bar of one of the little windows, that window zooms to full screen size. This is probably the easiest way to keep track of your work if you're dealing with more than three open files.

HOT LINKS

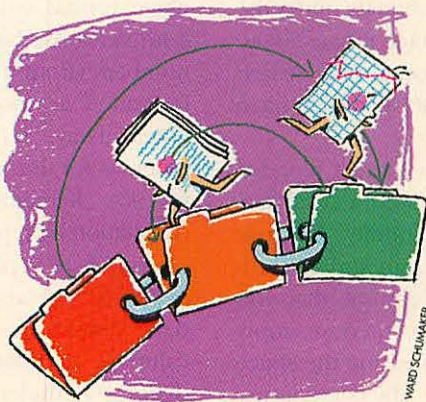
Excel 2.2 has been designed for smooth integration with Word 4.0. Thus Paste Link, a command that establishes an active link between worksheets, also establishes links between worksheets and word processing documents in Word (see "Thinking about Linking"). A precaution on linking is in order, though.

When you copy a section of a spreadsheet in Excel and then (using MultiFinder) switch to Word and choose the Paste Link command, your selection appears as a new Word table that includes any fancy formatting you've used in the spreadsheet, and an identifier paragraph including the source application and file name (the dotted underline means it is normally invisible in printing). If you're serious about producing a presentation-quality table in a document, however, you should do the formatting in Word and let Excel handle just the numbers. Many changes in spreadsheet formatting are not automatically updated by the Update Link command in Word. In fact, all you have to do is use the cursor to select an area that doesn't exactly match the linked worksheet table, and *all* formatting will be erased.

DATABASE DESIGN

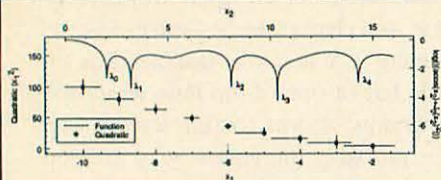
There are a few rough points to watch for in Excel 2.2's database capabilities. For example, Form, a new feature of the Data menu, is a great improvement for data entry over the previous Excel spreadsheet-only mode; it's fairly easy to design custom data-entry spreadsheets that automatically pop open in a Form view remi-

(continues)



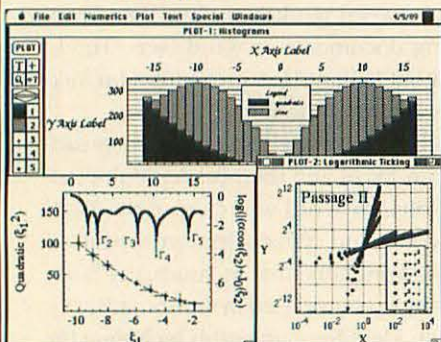
PASSAGE

PUBLICATION QUALITY GRAPHICS AND DATA ANALYSIS



Data Analysis Highlights:

- Rapid importing of data in a variety of formats.
- Seamless integration of numeric routines which include differentiation, integration, Fast Fourier Transformations, polynomial fitting, smoothing, interpolation, and nonlinear least square fitting.
- Nonlinear least squares fitting routine can fit any algebraic expression with up to 9 free fitting parameters.



Graphic Highlights:

- Plots include legends, text annotations and labels with superscripts, subscripts and Greek symbols.
- Plots can have log axes in base 10, e, and 2.
- 47 different plot symbols are available in both bitmap and PostScript™ form.
- Supports printers at their maximum resolution.
- Can produce stacked histograms containing up to 1000 bars.

For more information ask us for our 4 page flyer with Sample LaserWriter™ Output. We accept phone and purchase orders.

Passage I designed for all Macintosh computers \$250.00
Passage II written exclusively for the MacII for uncompromising speed. \$395.00
Shipping for U.S. for U.S. orders \$4.00



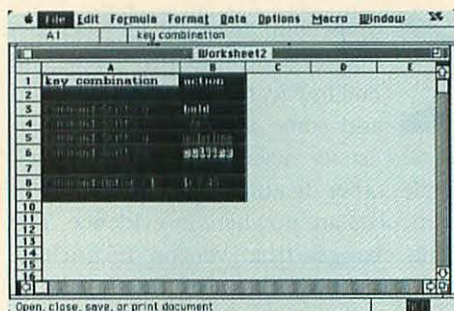
Passage Software, Inc.*
P.O. Box 8874
Fort Collins, CO 80525
(303) 490-1380

Mention you saw us in MacWorld and receive \$50 off your initial purchase. Offer good on phone and purchase orders postdated between Aug. 1, 1989 and Sept. 30, 1989.
* See our review in MacWorld - July, 1988, page 153.
Apple, Macintosh, and LaserWriter are trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

Circle 169 on reader service card

INSIGHTS

HOW TO



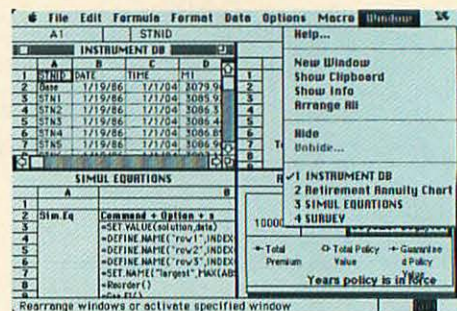
Fast Formats

These are among the most useful of Excel 2.2's new keystroke combinations for formatting text and numbers.

niscent of true database programs. Things are less efficient when you use the Form command to search data rather than enter it. First, there's no equivalent of Excel's Extract command. Second, the Find command under Form reports a misleading statistic at the top right of the dialog box. For example, in most other database programs the information "12 of 250" means that the program has found 12 matching records out of the 250 in the database. In Excel 2.2 it merely means that record number 12 is the first match it's found rather than the number of records that match the search criteria.

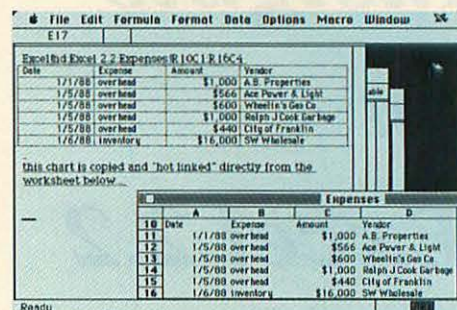
To get the information you usually expect from a search, you need to use a spreadsheet Criteria range and an Extract range in a clear zone near the bottom of your database range. Extract shows all the records that match the search criteria, and writes them in the space directly under the field names in the Extract range. Make sure the zone is clear, because the search results overwrite any data you may have there.

Although the Criteria/Extract range is the preferred way to search a database, watch out for one little oddity. Because the Criteria range is a standard spreadsheet range, you might assume that you can remove an old search criterion simply by selecting a cell and pressing the space bar to erase the contents. The contents are indeed erased on screen, but the program now looks for a space as a criterion instead of treating the cell as blank. Assuming none of the records have a space as the data in that field, you will get a particularly frustrating No Match dialog box.



A Convenient Arrangement

Arrange All lets you see at least a small piece of every open document. Double-click on the title bar to work with your selection in a full screen.



Thinking about Linking

Here a small table is pasted into Word 4.0 using Paste Link, with an accompanying Hidden Text identifier that labels the source. Excel 2.2 still leaves integrated document-handling tasks to your word processor, but it provides for semiautomatic updating of pasted data.

MATTERS OF FORM

Mac Excel worksheets are now PC Excel compatible in the new the BIF format, which leaves one bit of normally automatic format conversion up to you. In both versions, dates are actually stored as numbers (from a starting date) and then formatted as month/day/year. PC start-dates always refer to January 1, 1900, whereas for the Mac the default start-date is 1904. Remember to check the date calculation by typing 1/1/00 and trying to convert it to a plain number. If nothing happens, you are dealing with the 1904 date system. To change this, reset the calendar start-date with the Calculation dialog box under the Utilities menu.

The new Note facility (under the Formula menu) lets you attach reminder notes to spreadsheet cells, but the Note interface is awkward. It's probably best to shade every cell to which you attach a

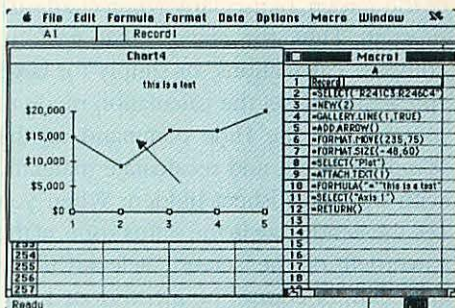
(continues)

note to remind you that it's there (shading is one of the Format options under Border). When you want to read the note, just double-click on the cell.

You may also wish to turn on the macro recorder the next time you experiment with chart formatting, since Excel now allows macros to automate all aspects of charting, including the new text enhancements and arrows (see "New Macros for Charts"). The macro facility runs so rapidly that, even if it has to step through a few changes and corrections, you can use a macro to format a chart more efficiently than you could by repeating even a minimum set of menu choices.

FROM START TO FINISH

If you typically work with a special worksheet for several days at a time (a project budget, for example), you can drag it to the System Folder and rename it Excel Startup. Then every time you start Excel, this worksheet is automatically loaded. The worksheet can also contain an autoexec macro (a macro with the name auto_open) that executes when it is



New Macros for Charts

Charts now feature a few enhancements, such as text fields and arrows, but the real progress here is automation. You can record macros to reproduce special custom chart formats you've designed.

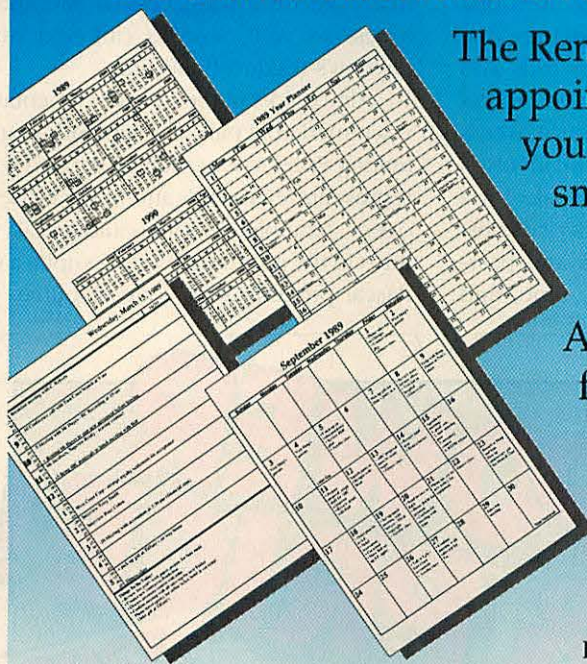
opened. Since this macro can be as complex as you wish, you can set up an entire customized environment, with not only custom formats but any changes you may want to make in the arrangement of menus and menu items.

Another type of autoexec macro worth considering in a multiuser environment is now possible in Excel 2.2 with the addition of the commands FWRITELN and (continues)

Rendezvous™

VERSION 2.5

A UNIFIED ELECTRONIC APPOINTMENT DIARY



The Rendezvous™ electronic appointment diary keeps you in control, working smart, prioritized, organized and on time.

And in case you ever forget, Rendezvous™ remembers.

Complete package \$200.

PMC Telesystems Inc.

(604) 255-9949

P. O. Box 5127, Vancouver, B.C. V6B 4A9

Circle 395 on reader service card

COPY II®

for Apple Macintosh

7
ver.

Copy II for the Macintosh is a collection of three utility programs and a new desk accessory, Locate. Copy II combines powerful utilities which enable you to: maintain and repair your floppy and hard disks, create archival backups and allow you to install applications directly onto your hard disk.

Here is what the experts say: "It's a well-rounded collection of useful disk utilities that no Macintosh user should be without."

John Gillett
Macworld 5/89

and

"... Copy II is now a utilities package whose components are powerful, useful, and, best of all, easy to use."

Jake Paden
MacUser 3/89



SEARCH AND FIND

Locate is a fast information finder in a desk accessory. You can search for full or partial file names, up to three key words, or both. Once found, Locate displays the information and under Multifinder will launch the application.

Requirements: Mac 512e, MacPlus, Mac SE, Mac II. Supports H.F.S., M.F.S., 400K and 800K disks, 1 or 2 drives, hard disks and all available memory.

To Order: see your local dealer.

\$39.95

Central Point
Software

INCORPORATED
- Founded in 1981 -

15220 N.W. Greenbrier Pkwy., #200
Beaverton, OR 97006 USA
503/690-8090

FREADLN. These commands allow you to read and write text in external files one line at a time. Using two external files, one for matching names and passwords and another for logging names and access times, you can record and control access to any worksheet. The procedure involves writing an autoexec macro that asks for a user name and password; checks it against the external file listing names and passwords; and writes the name, time, and

date of access to the external log file. The macro records unsuccessful attempts at access as well, so you can find out if anyone's tried to break in.

Almost lost in the new documentation is a remarkable pair of commands that, by linking Excel to externally compiled code, represents Microsoft's attempt to let developers "complete" some additional features in the program. If you compile a C or Pascal program as a code resource, you

can enter it into memory with the REGISTER macro command (which is also used to establish the type of parameters to be passed between Excel and the code resource). The CALL command then invokes the resource and passes the actual parameters of interest.

At least two types of applications should use the Call and Register pair to run external code instead of relying on Excel's own macro language. First, it's much more efficient to have advanced mathematical and statistical functions coded in C (using routines available in dozens of standard programming books); the speed difference for complex calculations can be a factor of from 10 to 60. Second, Call and Register commands are the easiest way to get access for Excel to database files in other formats. Records from other databases can be written directly to database areas of a worksheet, or summary data can be entered in specially formatted areas.

A LAST NOTE ON SPEED

Especially with large monitors, Excel spends lots of time rewriting the contents of the screen, particularly when charts are present. Thus for macros that perform complex calculations, or simply for large spreadsheets, set the calculation mode to Manual, use the Hide command on the Window menu, and recalculate manually with the spreadsheet hidden. When you see the Ready flag in the status zone, at the lower-left of the screen, Select Unhide (this can, of course, be incorporated into a macro as well). This procedure is worth trying for any recalculation or macro that takes more than about ten seconds in the usual automatic calculation mode.

SHARING THE WEALTH

If you've discovered a tip or shortcut not mentioned here, spread the word to other Macworld readers by sending it to *Quick Tips*, Macworld, 501 Second St., San Francisco, CA 94107. **M**

Charles Seiter is a Macworld contributing editor who has done beta-testing for most Mac spreadsheets. His primary interest is in macro programming for scientific applications.

From America's **LARGEST MacONLY Store!**

POWER & PRICE!

SE 30
\$2988
MacFriends' CPU price if purchased separately

\$6988
List \$9600. Save Over \$2600.

- 100mb. Hard Drive
- 5mb. Ram Memory
- Magnavox 256 Color Monitor
- 8 Bit Video Card
- 1.44 FDHD Drive
- 101 Keyboard
- Image Writer II Printer

PACKAGE #4

IICX
\$3288
MacFriends' CPU price if purchased separately

NEW! Just Released IICI 25 MHZ In Stock

SE
\$2088
MacFriends' CPU price if purchased separately

- 1mb. Ram
- 2 800k Drives
- Mac Printer
- 46mb. Hard Drive
- Seikosha Printer
- 101 Keyboard

PACKAGE #1

\$3288
List \$5200. Save Over \$1900.

WE WORK WITH YOU TO DESIGN A MAC SYSTEM TO YOUR SPECIFIC NEEDS

Leases Credit Cards CODs ... OK!

PACKAGE #6

- 1mb. Ram
- 46mb. Hard Drive
- 101 Keyboard
- 1.44 FDHD Drive
- Seikosha Printer

\$4188
List \$5600. Save Over \$1400.

COMPARE OUR ATTITUDE, PRICING WARRANTY & SUPPORT! WE'RE YOUR MAC STORE!

Mac Friends

Call our Mac Specialists NOW for the latest powerful Macintosh components & peripherals at the NATION'S LOWEST PRICES!

800 331-1322

TOLL FREE!

© 1989 CompuMart, Inc. AD #10.2 Mac, Macintosh™ APPLE COMPUTER, INC.

Circle 361 on reader service card

IT TAKES A CERTAIN TYPE TO MAKE A STATEMENT THIS BOLD.



Sumner Stone, Adobe's Director of Typography is a pioneer in the world of electronic type. He's the mastermind behind Adobe Originals, our distinctive new designs and typeface revivals that combine the traditions of great typography with the requirements of modern communication.

And Adobe is just the type to do it. As the undisputed leader of the electronic publishing industry, Adobe has the perfect typeface for every communication style—more than 500 downloadable fonts in all.

But there's more to our Adobe® Type Library than just variety. Because we license original typeface designs and painstakingly create them in PostScript® format, the quality simply can't be matched. And our technology assures that every font prints perfectly, regardless of point size or resolution of your PostScript printer.

You'll find that same level of quality in our screen fonts, too. In fact, the new Adobe Type Manager™ allows you to scale Adobe typefaces precisely to any size right on your Macintosh® display.

We've also added the Adobe Originals™, our unique collection of classic and original typefaces specifically designed and produced for today's electronic publishers. They're complemented by extended character sets—available separately—which may include small capitals, oldstyle figures, fractions, ornaments and titling capitals.

For more information about the Adobe Originals and the rest of the Adobe Type Library, send for our **free Font & Function™** catalog. It's full of tips and techniques by type experts from around the world. With a little help from our catalog, your PostScript printer and your Macintosh or IBM® PC computer, you'll be all set to publish like a pro.

Just mail this coupon for your **free copy of Font & Function**. Or, if you're the type who can't wait, call us at 800-83-FONTS.

To receive your free **Font & Function Adobe Type Catalog**, mail to: Font & Function, P.O. Box 7900, Mountain View, CA 94039-7900.

Check appropriate box(es):
I use a ☐ Macintosh ☐ IBM PC computer.

Name

Title

Company

Address City

State Zip Phone 01-12-02-2

Please allow 4 weeks for delivery.

ADOBE®

Adobe, the Adobe logo, PostScript and the PostScript logo are registered trademarks and Adobe Type Manager, Adobe Originals and Font & Function are trademarks of Adobe Systems Incorporated. Macintosh is the registered trademark of Apple Computer, Inc. IBM is the registered trademark of IBM Corporation. ©1989 Adobe Systems Incorporated. All rights reserved.

FONT & FUNCTION

YOUR
NEW
ADOBE
TYPE
CATALOG
IS HERE.



Look for this symbol on computers, printers and other products that include PostScript software from Adobe Systems. It's your guarantee of quality and compatibility.

UPDATES

This list brings you the highlights of software updates recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

AmPack Plus version 4.2.2 compares multiple loan amortization schedules on screen simultaneously, generates annual percentage-rate disclosure statements, handles biweekly payments, is MultiFinder compatible, and calculates and prints faster than previous version. Softflair, 8753 Parkview, Milwaukee, WI 53226; 414/797-4490. \$29.95; \$89.95 new.

Ball & Stick version 2.2 includes color and adds an interactive structure-manipulation facility with up to 8000 atoms (32,000 in the Mac II version) to this molecular graphics program. Most operations have been accelerated and the manual has been rewritten. N. Mueller, J.K.U., Altenbergerstrasse 69, A-4040 Linz, Austria. Free; \$299 new.

Capture version 2.0 is now a CDEV, so you can set your own key sequence and set the keys to activate the program. Compatible with 32-bit QuickDraw. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301; 818/991-6540. \$15; \$79.95 new.

CompileIt version 1.2 runs three times as fast as previous version, supports HyperCard properties such as text size and location, supports *Inside Macintosh*, volumes IV and V, adds a debug feature to isolate programming errors, and supports 1MB Macs. Includes a tutorial on Callbacks. Heizer Software, 1941 Oak Park Blvd., #30, Pleasant Hill, CA 94523; 415/943-7667. Free; \$99 new.

Digital Darkroom version 1.1 includes image-preview option that enables you to define and edit a portion of an image and to determine the resolution of an image. Also adds new features and interface improvements based on customer feedback. Silicon Beach Software, 9770 Carroll Center Rd., Ste. J, San Diego, CA 92126; 617/695-6956. Free; \$395 new.

EndLink version 1.1 supports four additional databases. Niles & Associates, 2200 Powell St., #765, Emeryville, CA 94608-1809; 415/655-6666. Free; \$99 new.

EndNote version 1.2 now works with Microsoft Word version 4.0. Lets you create footnotes and endnotes with any style text in Word version 4.0. Niles & Associates, 2200 Powell St., #765, Emeryville, CA 94608-1809; 415/655-6666. Free; \$129 new.

FoxBase+/Mac version 2.0 includes an object-oriented report writer and label generator, supports HyperCard XCMDs and XFCNs, does sorting and indexing twice as fast as previous version, supports custom hierarchical menus, lets you customize menu bar, and has a new database-editing window to make data entry and editing easier. Fox Software, 118 W. South Boundary, Perrysburg, OH 43551; 419/874-0162. \$495 for single user, \$695 for multiuser new.

LetrTuck+ version 2.0 allows the user to add or modify kern pairs in the System Folder, in any suitcase, or in the QuarkXPress 2.1 data structure. Edco Services, 1240 N. Dale Mabry Hwy., Tampa, FL 33618; 813/962-7800. \$20; \$147 new.

(continues)

3x or 4x Bitmap Fonts For Your Printer?

Create them from your
current fonts with ...

FONTASTIC PLUS

Fontastic™ Plus is a specialized bitmap font editor for the Apple® Macintosh®. With Fontastic Plus, you can create new fonts and typefaces, edit or resize your current fonts, or customize existing character sets with distinctive characters, logos, and graphics.

Fontastic Plus includes such features as kerning pairs and user-definable character spacing, in addition to complete bitmap font editing capabilities. And you can size your fonts from 1 to 127 points for highest quality output on QuickDraw printers.

So, whatever your bitmap font needs — 3x or 4x size characters, kerning pairs (even for PostScript® fonts), or just simple editing — Fontastic Plus is your solution.

Sugg. Retail: \$99.95

For more information,
contact your local
dealer, or Altsys at:

Altsys Corporation
720 Avenue F, Suite 109
Plano, Texas 75074
(214) 424-4888

Circle 35 on reader service card

NEVER RE-TYPE ANOTHER DOCUMENT

READ-IT! O.C.R.
 • Works with any scanner.
 • Minimum hardware required — Mac Plus.
 • Fast, accurate and easy to use.
 • Proven technology — over 30,000 sold.
 • Pre-trained for popular typefaces.
 • "Easy Learn"™ training for new typefaces.
 • Reads columns, dot-matrix and typeset material.
 • Recognizes foreign languages.

Why Type It, When Any Scanner Can Read It.

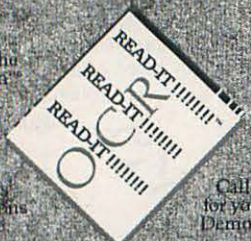
Stop typing! Now with READ-IT! O.C.R. software and any scanner you can turn virtually any printed material including Fax, Modern documents, contracts, newspapers, price lists, phone books etc., into usable text files for your word processing, database, spreadsheet or desktop publishing application.

"For performance and value,
READ-IT! is an excellent choice."

MacUser June 1989

1-800-822-0772

READ-IT!
 Personal for the
 ThunderScan™
 digitizer,
 ScanMan™,
 Lightning
 Scan™ and
 other hand-
 held scanners
 and PC versions
 also available



Call today
 for your \$10
 Demo Pack

OLDUVAI

7520 Red Road, Suite A, South Miami, FL 33143
 (305) 665-4665 FAX (305) 665-0671

Circle 39 on reader service card

MacFlow version 3.0 adds color for the Mac II. Elements of a flowchart can be selectively colorized. Allows text to be varied in font, style, and size within each symbol and on connecting lines, and includes a stationery feature that lets the user set suitable defaults for flowcharts. Adds automatic right-angle setting to automatically adjust multisegment lines to right angles. Manual has been rewritten. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301; 818/991-6540. \$30; \$245 new.

MacFortran for MPW version 1.1 supports SADE (Standard Apple Debugging Environment) and has increased support for MacApp (Macintosh Applications Development Package). Requires MPW version 3.0, which is not included. Absoft, 2781 Bond St., Auburn Hills, MI 48057; 313/853-0050. Free; \$295 new.

Macintosh Information Service version 2.0 has been rewritten in HyperCard instead of its original FoxBase. User can install an MIS button on home card that will access the directory. MacKay Associates, 111 N. 56th St., #102, Lincoln, NE 68504; 402/466-6665, 800/458-3463. Free; \$245 for site license that includes up to 10 users new.

MacPrint version 1.1 runs with Hewlett-Packard's LaserJet Plus, DeskJet, and DeskJet Plus. Prints envelopes and prints in landscape mode. Includes four fonts designed by Agfa Compugraphic, uses Insight's Font Mapper to create Macintosh screen fonts, and supports more font cartridges than earlier versions. Insight Development Corp., 2200 Powell St., #500, Emeryville, CA 94608-1809; 415/652-4115. Free; \$149 new.

MacPrint II enables the MacPrint cache card accelerator for the Mac II to support the Motorola PMMU and

makes it compatible with System 7.0. Orchid Technology, 45365 Northport Loop W, Fremont, CA 94538; 415/683-0300. Free; \$299 new.

Mac286 and Mac86 version 2.0 of each model increases screen-refresh rate fourfold, includes multitasking under MultiFinder, and allows the user to cut and paste graphics and text between MS-DOS and Mac applications. Orange Micro, 1400 N. Lakeview Ave., Anaheim, CA 92807; 714/779-2772. \$10 each; Mac286 \$1599 new, Mac86 \$699 new.

More II version 2.01 is a maintenance upgrade to fix problems discovered in version 2.0. Symantec, 117 Easy St., Mountain View, CA 94043; 415/964-6300. Free; \$395 new.

Nutrition Stack version 2.0 lists data for over 2000 foods from USDA Handbook. Database has data for types of fat and 18 amino acids, and includes a food-exchange-group calculator for use by diabetics. Supports multiple users and has context-sensitive help buttons. Big Byte Software, 25 Blake St., Needham, MA 02192; 617/444-3028. \$20; \$79 new.

StickyBusiness version 1.0.6 includes the capability to Save and Use frequently used label layouts; can grab icons from applications, icon libraries, or the desktop; can align and print pin-feed label forms in LaserWriters. Also contains more preformatted templates than original version. Williams & Macias, S. 3707 Godfrey Blvd., Spokane, WA 99204; 800/752-4400, 509/458-6312. Free; \$179.95 new. 

To have products listed in this section,
 send upgraded software, an outline of major
 changes since the previous release, upgrade price,
 suggested retail price, company name, mailing
 address, and phone number to Updates, Macworld,
 501 Second St., San Francisco, CA 94107.

GIVE YOUR EYES A BREAK

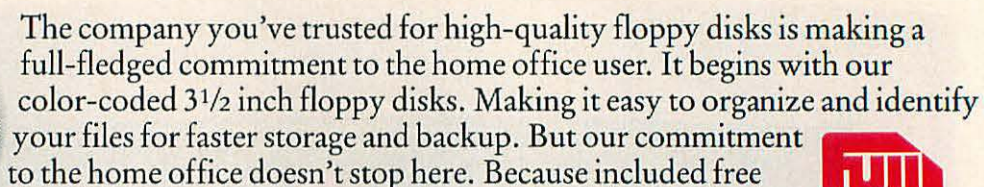


If you need color on cue for desktop publishing, CAD/CAM, presentation graphics or any other task requiring the most realistic images possible, the PCPC II/32 High Resolution Color Graphics System provides the power and performance to capture every shot. Crispness and brilliance are yours as never before. Need colors, and lots of them? You can choose from almost 17 million different ones. With this kind of real-time quality, you are free to pool all your resources and be the best you can be. And all this happens on an absolutely flicker-free Trinitron™ monitor with a picture so sharp it must be seen to be believed! Down time? With the PCPC II/32, down time is all but a thing of the past. What could be better? More personalized choices, of course - just to ensure that you have your ideal system - a super workstation or executive center - PCPC offers two monitor sizes, so don't get hustled. If the color of your money is important to you, give your eyes the break they deserve!



Personal Computer Peripherals Corporation

4710 Eisenhower Blvd., Building A-4
Tampa, FL 33634
800-622-2888
813-884-3092



FUJI
A new way of
seeing things.

We'll not only improve your home office output,
we'll clean up your desk for free.



WHERE TO BUY

This listing provides company addresses and phone numbers for products mentioned in this issue. Allow several weeks for responses to Reader Service Card inquiries. Asterisks indicate vendors who prefer to be contacted by phone.

Reader Service

- 701 Aardvark** Microseeds Publishing, Inc., 7030 W. Hillsboro Ave., Tampa, FL 33634; 813/882-8635.
- 702 Ask** CE Software, Inc., P.O. Box 65580, West Des Moines, IA 50265; 515/224-1995.
- 703 Abaton QuickStep** Abaton, a Division of Everex, 48431 Milmont Dr., Fremont, CA 94538; 415/683-2226.
- Ad-Builder Electronic** Multi-Ad Services, Inc., 1720 W. Detweiller Dr., Peoria, IL 61615-1695; 309/692-1530.
- 704 Adobe Collector's Edition: Patterns & Textures** Adobe Systems, Inc., P.O. Box 7900, Mountain View, CA 94039-7900; 415/961-4400, 800/833-6687.
- 705 Adobe Collector's Edition: Symbols, Borders & Letterforms** Adobe Systems, Inc., P.O. Box 7900, Mountain View, CA 94039-7900; 415/961-4400.
- 706 Agfa Focus S800GS** Agfa Compugraphic Division, 90 Industrial Way, Wilmington, MA 01887; 508/658-5600.
- 707 Agfa P3400PS** Agfa Compugraphic Division, 90 Industrial Way, Wilmington, MA 01887; 508/658-5600.

Reader Service

- 708 Air Art** Storm King Technology, Dept. JHW-30608, P. O. Box 185, Wilson, WY 83014; 913/682-3668.
- 709 AntiToxin** Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301; 818/991-6540.
- 710 Army Art** Storm King Technology, Dept. JHW-30608, P.O. Box 185, Wilson, WY 83014; 913/682-3668.
- 711 Artagenix: Planes of Fame** Devonian International Software Co., P.O. Box 2351, Montclair, CA 91763; 714/621-0973.
- 712 Art Clips, First Edition** Tactic Software, 13615 S. Dixie Hwy., #118, Miami, FL 33176; 305/378-4110.
- 713 ArtClips, Volume 1: Graphics & Symbols** Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL; 305/665-4665, 800/822-0772.
- 714 ArtClips, Volume 2: Business Images** Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL; 305/665-4665, 800/822-0772.
- 715 Art Deco** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997, 800/525-1552.
- 716 Art Disk Volumes 1-7** D.V. Franks, 3721 Sue Ellen Dr., Raleigh, NC 27604; 919/872-5379.
- 717 Art Nouveau Images, Volume 1** Silicon Designs, Inc., P.O. Box 2234, Orinda, CA 94563; 415/254-1460.
- 718 AST TurboLaser/PS Plus 3** Camintown, Inc., 2332 McGaw Ave., Irvine, CA 92714; 714/863-1333.
- 719 Atex Design Software** Atex Magazine Publishing Systems, 32

Reader Service

- Wiggins Ave., Bedford, MA 01730; 617/275-8300, 800/433-2839.
- 720 AutoSave II** Magic Software, 1602 Cascio Dr., Bellevue, NE 68005; 402/291-0670, 800/342-6243.
- 721 Bearware** Collector Software, Inc., 1535 W. Holt Ave., Pomona, CA 91768; 714/620-9014.
- 722 BigThesaurus** Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122; 305/594-6965, 800/622-6827.
- 723 Borders & Boxes** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 724 Business Graphics** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 725 Business LaserPrinter** GCC Technologies, 580 Winter St., Waltham, MA 02154; 617/890-0880.

Reader Service

- 415/962-0195.
- 730 ClickArt Christian Images** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.
- 731 ClickArt Holidays** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.
- 732 ClickArt Personal Graphics** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.
- 733 ClickArt Publications** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.
- 734 Cliptures, Volume 1: Business Images** Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031; 213/221-6436, 800/876-5665.
- 735 Cliptures, Volume 2: Business Images 2** Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031; 213/221-6436, 800/876-5665.
- 736 Coloring Book Art** Bede Tech, 8327 Clinton Rd., Cleveland, OH 44144; 216/631-4214, 800/772-4536.
- 737 Computers & Technology** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 738 Creative Seasonal** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.
- 740 Creative Theme Art 1** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.
- 741 CrystalPrint Publisher** Qume Corp., 500 Yosemite Dr., Milpitas, CA 90035; 408/942-4000, 800/223-2479.
- (continues)

Reader Service

- **Cursor INIT** Shareware.
- 742 **CyberChrome** CyberChrome, Inc., 5 Science Park Ctr., P.O. Box 9565, New Haven, CT 06536; 203/622-5500.

D

- 743 **Davka Graphics I** Davka Corp., 845 N. Michigan Ave., #843, Chicago, IL 60611; 312/944-4070.
- 744 **Davka Graphics II** Davka Corp., 845 N. Michigan Ave., #843, Chicago, IL 60611; 312/944-4070.
- 745 **Davka Graphics III** Davka Corp., 845 N. Michigan Ave., #843, Chicago, IL 60611; 312/944-4070.
- 746 **Davka Graphics EPS: Jewish Holidays** Davka Corp., 845 N. Michigan Ave., #843, Chicago, IL 60611; 312/944-4070.
- 747 **DeskTop Art: Artfolio I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 748 **DeskTop Art: Borders & Mortices I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 749 **DeskTop Art: Business I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 750 **DeskTop Art: Education I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 751 **DeskTop Art: EPS Athletics I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 752 **DeskTop Art: EPS Commerce I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 753 **DeskTop Art: EPS Design Elements I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 754 **DeskTop Art: EPS People I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.

Reader Service

- 755 **DeskTop Art: EPS Potpourri I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 756 **DeskTop Art: EPS Sales & Promotion I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 757 **DeskTop Art: EPS Seasonal I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 758 **DeskTop Art: Four Seasons I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 759 **DeskTop Art: Graphics & Symbols I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 760 **DeskTop Art: Health Care I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 761 **DeskTop Art: Sports I** Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; 309/688-8800.
- 762 **Different Drummer** Primera Software, 650 Cragmont Ave., Berkeley, CA 94707; 415/525-3000.
- 763 **Digit-Art, Volumes 1-15,** Image Club Graphics, #5, 1902 11th St., Calgary, Alberta, Canada T2G 3G2; 403/262-8008.
- 764 **DiskExpress** ALSoft, Inc., P.O. Box 927, Spring, TX 77383-0927; 713/353-4090.
- 765 **DocuComp** Advanced Software, Inc., 1095 E. Duane Ave., #212, Sunnyvale, CA 94086; 408/733-0745.

E

- **Earth** Shareware.
- 767 **Electronic Wood Cuts** Bitmap, Inc., P.O. Box 237, West Wego, LA 70094; 504/366-3241.
- 768 **EPS Business Art** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.
- 769 **EPS Illustrations** T/Maker Co., 1390 Villa St., Mountain View, CA 94041; 415/962-0195.

Reader Service

- 770 **Epson LQ Printer Software for Macintosh** Epson America, Inc., 2780 Lomita Blvd., Torrance, CA 90505; 213/539-9140.
- 771 **Epson LQ-950** Epson America, Inc., 2780 Lomita Blvd., Torrance, CA 90505, 800/922-8911.
- 772 **Exercise & Fitness** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 773 **ExpressWrite** Exodus Software, 8620 Winton Rd., #304, Cincinnati, OH 45231; 513/522-0011.

F

- **F1F4** Shareware.
- 774 **FastTrack Schedule** AEC Management Systems, Inc., 20524 Amethyst Ln., Germantown, MD 20874; 301/428-3694.
- 775 **FileMagic** Magnus Corp., 9025 61st Pl. W., Mukilteo, WA 98275; 206/828-1789.
- 776 **Findswell** Working Software, Inc., P.O. Box 1844, Santa Cruz, CA 95061-1844; 408/423-5696.
- **Fish** Shareware.
- 777 **Flags of the USA** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.
- 778 **Flags of the World** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.
- **Flex** Shareware.
- 779 **Food** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997, 800/525-1552.
- 780 **The Four Seasons** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- **Front & Center** Shareware.
- 781 **FullWrite Professional** Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319; 213/329-8000, 800/437-4329.

G

- 782 **GlobalArt Oriental Images: Decorative Accents** Cathay Europa Trading Co., P.O. Box 599A, Biddeford,

Reader Service

- ME 04005; 207/967-5358.
- 783 **GlobalArt Oriental Images: Embellishments** Cathay Europa Trading Co., P.O. Box 599A, Biddeford, ME 04005; 207/967-5358.
- 784 **Graphic Warehouse** Showker Graphic Arts & Design, 15 Southgate, Harrisonburg, VA 22801; 703/433-8402.
- 785 **The Grappler LS** Orange Micro, Inc., 1400 N. Lakeview Ave., Anaheim, CA 92807; 714/779-2772.
- 786 **Hell ChromaCom** Hell Graphic Systems, Inc., 25 Harbor Park Dr., Port Washington, NY 11050; 516/484-3000.
- 787 **Heraldry: Volume I, II, III** Pleasant Graphic Ware, Inc., P.O. Box 506, Pleasant Hill, OR 97455; 503/345-5796.
- **HierDA** Shareware.
- 788 **Holiday Clip Art** Bitmap, Inc., P.O. Box 237, West Wego, LA 70094; 504/366-3241.
- 789 **Hollywood Greats** Visatex Corp., 1745 Dell Ave., Campbell, CA 95008; 408/866-6596.

I

- **IBM Personal Page Printer II** IBM, Old Orchard Rd., Armonk, NY 10504; 914/765-1900, 800/447-4700.
- 790 **Icon-It** Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143; 305/665-4665.
- 791 **Images with Impact: Business I** 3G Graphics, 11410 N.E. 124th St., #6155, Kirkland, WA 98034; 206/823-8198, 800/456-0234.
- 792 **Images with Impact: Graphics & Symbols I** 3G Graphics, 11410 N.E. 124th St., #6155, Kirkland, WA 98034; 206/823-8198, 800/456-0234.
- 793 **Inhouse Complete '88** Multi-Ad Services, 1720 W. Detweiller Dr., Peoria, IL 61615; 309/692-1530.
- 794 **INITPicker** Microseeds Publish-

(continues)

"I drove for 12 hours to attend MacCamp™ and I would do it again!"

Do what again? Attend **MacCamp™**! For over 5 years Financial Freedom Report has served the Macintosh user as a Value Added Reseller (VAR) and software developer. We have come to know the Macintosh inside and out. MacCamp was a natural development in the course of this evolution.

What we heard from you was: **"Show me how."** And that is what we did!

MacCamp is an intensive 2 day training seminar that will **"SHOW YOU HOW"** to better utilize the Macintosh and its most popular software applications. Introduction and advanced workshops are offered on the Mac, Microsoft® Word, Microsoft® Excel, FileMaker® II, PageMaker® and Hypercard™.

The Cost to you is \$249.00. This includes the 2 days plus materials, lunch and more. As one person put it: "I learned enough in the first class to more than pay for the workshop!" That is known as value.

And that is exactly what you will receive from MacCamp—**VALUE!** Additionally that translates to more profitability for your company. And that is what you need to look for in a training program. There are many programs out there that provide training, but there is only one MacCamp. After all, who would you want to get answers from—the ones who make the stuff or some user that "thinks" they know all the answers but don't even scratch the surface.

Some of our Clients and what they are saying.

Cornell University
Motorola
GTE
Citibank
ABC News
Poloroid
Novell
Joint Chiefs of Staff
Illinois Bell
MCI

"I drove 3 hrs each way for the 2 days and I would do it again! The seminar was well worth the time." Marsha J. Swaminathan

"WOW! Finally a Training Program where the instructors were great, very friendly and really knew the software programs. They were able to talk in 'English' so that I could understand what was being taught. My knowledge of software has been enhanced tremendously."

Thanks for everything. I definitely recommend your program to everyone that owns a Macintosh." William K. Lindsey

"We attended a training session conducted by MacCamp instructors. We found the session to be extremely informative and also enjoyable." Aileen D. Zanco; San Rafael, CA

MacCamp Schedule

Find a location nearest you and plan to attend.

September
San Francisco, CA
Honolulu, HI

October
Chicago, IL
Detroit, MI

November
Atlanta, GA
Houston, TX

**The training you asked for . . . The results you need . . .
at a Price you can afford!**

MacCamp™

THE ultimate in Macintosh™ training.

Call or write today for more information or to make reservations to attend MacCamp in your area.
Group rates are available.

MacCamp 1831 Fort Union Blvd., Salt Lake City, Utah 84121
Call toll free 1-800-338-9715 Fax (801) 942-7489

MacCamp is a division of Mark O. Haroldsen, Inc.

1989 Mark O. Haroldsen, Inc.

PRODUCT INDEX

READER SERVICE
NUMBER

Software

- BUSINESS**
- Ashton-Tate, 59
 - 365 Ceres Software, 59
 - Checkmark Software, 269
 - 290 Computalabel, 244
 - 165 Design Science, 242
 - 157 Generic Software, 184
 - Microsoft, IFC-1
 - Microsoft, 207
 - 162 Odesta, 226
 - 42 Personal Training Systems, 19
 - 395 PMC Telesystems, 257
 - 396 Sensible Software, 72
 - 423 Serius, 76
 - 297 Shana Corporation, 204
 - 210 SPSS, Inc., 229
 - 491 Systat, 245
 - 492 Systat, 245
 - 135 TBSP, 12
 - 126 WordPerfect, 241
- VERTICAL**
- Checkmark Software, 269
 - 169 Passage Software, 256
 - 135 TBSP, 12
- DATA MANAGEMENT**
- 152 Fox Software, 236
 - Oracle, 31
 - 451 ProVue, 224B
 - 297 Shana Corporation, 204
- WORD PROCESSING**
- Ashton-Tate, 59
 - 165 Design Science, 242
 - 253 Paragon Concepts, Inc., 56
 - 396 Sensible Software, 72
 - 332 T/Maker, C3
 - 126 WordPerfect, 241
- CAD/CAM**
- 157 Generic Software, 184
 - 77 Graphsoft, 234
 - 66 Intergraph, 231
- COMMUNICATION**
- 281 DataViz, 235
 - 241 DCA, 100-101
 - 287 Pinnacle Micro, 83
 - 48 Software Ventures, 27
- EDUCATIONAL**
- 165 Design Science, 242
 - 406 MacAcademy, 96
 - 169 Passage Software, 256
 - 42 Personal Training Systems, 19
- FORMATS**
- Image Club, 191
 - Image Club, 238
 - 211 Zipatone, 271
- GRAPHICS/DESKTOP PUBLISHING**
- Adobe, 69
 - Adobe Systems, 178
 - Adobe Systems, 259
 - 401 Advanced Gravis, 26
 - 35 Altsys, 261

READER SERVICE
NUMBER

- 381 Berkeley Systems Design, 78
 - 187 Berkeley Systems Design, 78
 - 365 Ceres Software, 59
 - 346 Deneba Software, 55
 - 157 Generic Software, 184
 - Image Club, 191
 - Image Club, 238
 - 342 LaserMAX, 186
 - 33 Mansfield Systems, 40
 - 229 Paracomp, 34
 - 169 Passage Software, 256
 - 42 Personal Training Systems, 19
 - 295 Quark, 94
 - 115 Qume, 222A
 - 353 Qume, 222A
 - 297 Shana Corporation, 204
 - 266 Silicon Beach, 227
 - 185 Springboard Software Group, 106
 - 418 Timeworks, 62
 - 376 Xerox Imaging Systems, 175
- PERSONAL BUSINESS/HOME**
- Intuit, 33
 - 395 PMC Telesystems, 257
- ENTERTAINMENT**
- 444 Activision, 173
 - 291 XOR/PCAI, 82
- NETWORKING**
- 150 Farallon Computing, 80-81
 - Shiva, 5
- LANGUAGES/DEVELOPMENT SYSTEMS**
- 39 Olduvai Corporation, 262
 - 423 Serius, 76
- UTILITIES**
- 202 ALSoft, 8
 - 381 Berkeley Systems Design, 78
 - 187 Berkeley Systems Design, 78
 - 439 GDT Softworks, 47
 - 350 Supremac Technology, 221
 - 382 Supremac Technology, 221
 - 325 Supremac Technology, 223
 - 237 Symantec, 9
- MISCELLANEOUS**
- Checkmark Software, 269
 - 135 TBSP, 12

Hardware

- COMPUTER SYSTEMS**
- Apple Computer (Ashton-Tate), 60-61
 - 361 MacFriends, 258
- PRINTERS**
- 11 GCC Technologies, 39
 - 308 GCC Technologies, 41
 - 422 GCC Technologies, 43
 - 343 Hewlett Packard, 65-67
 - 102 Jasmine, 74-75
 - 342 LaserMAX, 186
 - 314 NEC Information Systems, 196
 - 409 Newgen, 79
 - 104 QMS/Laser Connection, 200

READER SERVICE
NUMBER

- 115 Qume, 222A
 - 353 Qume, 222A
 - 143 Tektronix, 243
 - 93 Varityper, 171
- BOARDS**
- 1 Air Land Systems, 220A
 - 403 American Micro Distributors, 47
 - 375 Clearpoint Research, 251
 - 241 DCA, 100-101
 - 173 Dove Computer Corp., 182
 - 124 GW Instruments, 68
 - 342 LaserMAX, 186
 - 161 Micron Technology, 187
 - 158 Microtek, 260
 - 196 National Semiconductor, 104
 - 82 Orange Micro, 57
 - Raster Ops, 20-21
 - 309 Supremac Technology, 225
 - 445 Truevision, 218-219B
- DIGITIZERS/SCANNERS**
- 107 Abaton, 24-25
 - 131 Abaton, 24-25
 - 230 Caere Corporation, 180
 - 158 Microtek, 260
 - 427 Microtek, 233
 - 268 Nikon, 58
 - 176 Thunderware, 4
- DISPLAY**
- 303 E-Machines, 177
 - 63 In-Focus Systems, 64
 - 257 NEC, 36-37
 - 46 Radius, 7-Jun
 - Raster Ops, 20-21
 - 24 Taxan, 189
- MODEMS**
- 61 Computer Friends, 278
 - 383 Hayes Microcomputer, 166-167
- HARD DISKS/STORAGE**
- 403 American Micro Distributors, 47
 - 3 Archive, 46
 - 479 BASF Corporation Information, 219A
 - 41 Braemar Corp, 42
 - 217 Braemar Corp, 42
 - 154 Ehman Engineering, 16
 - 452 Ehman Engineering, 92
 - 372 FWB, 232
 - 373 FWB, 232
 - Hard Drives International, 220B
 - 471 Irwin Magnetic Systems, 218A
 - 102 Jasmine, 74-75
 - 145 La Cie, 22
 - MACsetra, 30
 - 275 MicroNet Technology, 198
 - 243 Microtech International, 28-29
 - 424 Mirror Technologies, 70-71
 - 287 Pinnacle Micro, 83
 - 214 PLI, 254
 - 149 Rodime, 32
 - 414 Storage Dimensions, 102
 - 321 Tecmar, 246
- VIDEO**
- 82 Orange Micro, 57

READER SERVICE
NUMBER

- 223 Personal Computer Peripherals Corporation, 263
 - 309 Supremac Technology, 225
 - 24 Taxan, 189
- EXPANSIONS/UPGRADES**
- 161 Micon Technology, 187
 - 436 Pinnacle Sales International, 38
- SOFTWARE SECURITY DEVICE**
- 106 Rainbow Technologies, 202
- MISCELLANEOUS**
- 401 Advanced Gravis, 26
 - 403 American Micro Distributors, 47
 - 61 Computer Friends, 278
 - 150 Farallon Computing, 80-81
 - 63 In-Focus Systems, 64
 - 410 Key Tronic, 195
 - 186 Sun Remarketing, 193
 - 118 Zericon, 224A
 - 267 Zericon, 224A

Accessories

- FLOPPY DISKS/HOLDERS**
- 402 3M, 14-15
 - 437 Fuji, 264
 - Maxell, 52
- FURNITURE**
- Anthro Corp., 64
 - 296 Scanco, 222B
- SERVICES**
- 319 CompuServe, 108
 - 431 MacCamp, 267
 - 293 Safeware, 252
- MISCELLANEOUS**
- 401 Advanced Gravis, 26
 - 61 Computer Friends, 278
 - Kensington Microware, 44-45
 - Kensington Microware, C4
 - 296 Scanco, 222B
 - 239 Secure-It, 242

Mail Order

- 5 Beverly Hills Computers, 275
- 32 CDA Computer Sales, 228
- 79 Diskette Connection, 277
- 368 Dr. Mac, 253
- 177 Mac Discount Warehouse, 299
- 70 Mac Zone/The, 48-51
- MacConnection, 110-119
- 109 MacFriends, 54
- 361 MacFriends, 258
- 264 MacLand, 276
- 465 MacProducts USA, 273
- 222 MacSystems, 277
- 78 MacWarehouse, 84-91
- 44 Programs Plus, 208-215
- 258 Software Library, 277
- 54 USA Flex, 223
- 269 USA Flex, 278

MACWORLD

FREE PRODUCT INFORMATION

☐ Check box and fill in the appropriate information to subscribe to Macworld.
You will be billed \$24.95 for a 1-year (12 issue) subscription (U.S. only).

(1-250)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250

(251-500)

251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

(501-550)

501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550

CATALOG INFORMATION

(551-700)

551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700

WHERE TO BUY

(701-900)

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Expires 1/02/90

S1

OCTOBER 1989

FREE PRODUCT INFORMATION!

Get valuable information about the products which interest you. There's **no cost; no obligation.**

Simply print your name, title, address (with zip) and telephone number. Circle the numbers on the card for the products which interest you. Mail the card. We even pay the postage!

Numbers for advertised products can be found in the ad and in both the Product Index and the Advertiser Index. Product listings mentioned editorially can be found in the "Where to Buy" section.

MACWORLD

FREE PRODUCT INFORMATION

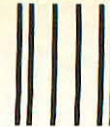
☐ Check box and fill in the appropriate information to subscribe to Macworld.
You will be billed \$24.95 for a 1-year (12 issue) subscription (U.S. only).

(1-250)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250

(251-500)

251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

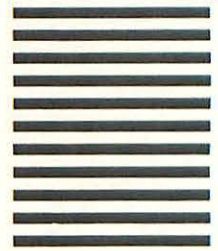
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

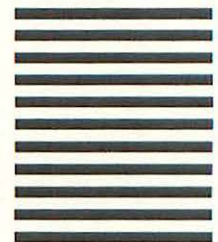
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906



ADVERTISER INDEX

READER SERVICE
NUMBER

- 107 Abaton, 24-25
131 Abaton, 24-25
444 Activision, 173
— Adobe Systems, 69
— Adobe Systems, 178
— Adobe Systems, 259
401 Advanced Gravis, 26
1 Air Land Systems, 220A
202 ALSoft, 8
35 Altsys, 261
403 American Micro Distributors, 47
— Anthro Corp., 64
— Apple Computer, 60-61
3 Archive, 46
— Ashton-Tate, 59, 60-61
479 BASF, 219A
381 Berkeley Systems Design, 78
187 Berkeley Systems Design, 78
5 Beverly Hills Computers, 275
41 Braemar Corp, 42
217 Braemar Corp, 42
230 Caere Corporation, 180
32 CDA Computer Sales, 228
— Central Point Software, 257
365 Ceres Software, 59
— Checkmark Software, 269
375 Clearpoint Research, 251
319 CompuServe, 108
290 Computalabel, 244
61 Computer Friends, 278
281 DataViz, 235
241 DCA, 100-101
346 Deneba Software, 55
165 Design Science, 242
79 Diskette Connection, 277
173 Dove Computer, 182
368 Dr. Mac, 253
303 E-Machines, 177
154 Ehman Engineering, 16
452 Ehman Engineering, 92
150 Farallon Computing, 80-81
152 Fox Software, 236
437 Fujii, 264
372 FWB, 232
373 FWB, 232
11 GCC Technologies, 39
308 GCC Technologies, 41
422 GCC Technologies, 43
439 GDT Softworks, 47
359 GE Information Services, 98
157 Generic Software, 184
77 Graphsoft, 234
124 GW Instruments, 68
— Hard Drives International, 220B
383 Hayes Microcomputer, 166-167
343 Hewlett Packard, 65-67
— Image Club, 191
— Image Club, 238
63 In-Focus Systems, 64
— Info '89, 239
390 Informix, 216
66 Intergraph, 231
— Intuit, 33
471 Irwin Magnetic Systems, 218A
102 Jasmine, 74-75
— Kensington Microware, 44-45
— Kensington Microware, C4
410 Key Tronic, 195
145 La Cie, 22
342 LaserMAX, 186

READER SERVICE
NUMBER

- 128 Layered, Inc., 13
177 Mac Discount Warehouse, 299
70 Mac Zone/The, 48-51
406 MacAcademy, 96
431 MacCamp, 267
— MacConnection, 110-119
109 MacFriends, 54
361 MacFriends, 258
264 MacLand, 276
465 MacProducts USA, 273
— MACsetra, 30
222 MacSystems, 277
78 MacWarehouse, 84-91
33 Mansfield Systems, 40
— Maxell, 52
37 Meca, 73
161 Micron Technology, 187
275 MicroNet Technology, 198
— MicroSoft, IFC-1
— Microsoft, 207
243 Microtech International, 28-29
427 Microtek Lab Inc., 233
158 Microtek Lab Inc., 260
424 Mirror Technologies, 70-71
196 National Semiconductor, 104
257 NEC, 36-37
314 NEC Information Systems, 196
409 Newgen, 79
268 Nikon, 58
399 Niles & Associates, 230
162 Odesta, 226
39 Olduvai Corporation, 262
— Oracle, 31
82 Orange Micro, 57
229 Paracomp, 34
253 Paragon Concepts, Inc., 56
169 Passage Software, 256
223 Personal Computer Peripherals Corporation, 263
42 Personal Training Systems, 19
287 Pinnacle Micro, 83
436 Pinnacle Sales International, 38
214 PLI, 254
395 PMC Telesystems, 257
44 Programs Plus, 208-215
451 ProVue, 224B
104 QMS/Laser Connection, 200
295 Quark, 94
115 Qume, 222A
353 Qume, 222A
46 Radius, 6-7
106 Rainbow Technologies, 202
— Raster Ops, 20-21
149 Rodime, 32
293 Safeware, 252
296 Scanco, 222B
239 Secure-It, 242
396 Sensible Software, 72
423 Serus, 76
297 Shana Corporation, 204
— Shiva, 5
266 Silicon Beach, 227
258 Software Library, 277
48 Software Ventures, 27
185 Springboard Software Group, 106
210 SPSS, Inc., 229
414 Storage Dimensions, 102
186 Sun Remarketing, 193
105 Supremac Technology, 10
— Supremac Technology, 11

READER SERVICE
NUMBER

- 350 Supremac Technology, 221
382 Supremac Technology, 221
325 Supremac Technology, 223
309 Supremac Technology, 225
237 Symantec, 9
491 Systat, 245
492 Systat, 245
402 3M, 14-15
332 T/Maker, C3
24 Taxan, 189
135 TBSP, 12
321 Tecmar, 246
143 Tektronix, 243
176 Thunderware, 4
418 Timeworks, 62
445 Truevision, 218-219B
54 USA Flex, 223
269 USA Flex, 278
93 Varityper, 171
126 WordPerfect, 241
376 Xerox Imaging Systems, 175
291 XOR/PCAI, 82
118 Zeticon, 224A
267 Zeticon, 224A
211 Zipatone, 271

ACCOUNTING for the Macintosh

When you do accounting you'll want something more than database adaptations, spreadsheet templates or converted MS-DOS programs. All three of our fine accounting programs were created especially for the Macintosh!

MULTILEDGER™

Now you can get General Ledger, Accounts Receivable, Accounts Payable, and Inventory tracking together in one completely integrated program ... at a fraction of the cost of buying individual G/L, A/R, A/P, and Inventory modules.

PAYROLL

This easy-to-learn, easy-to-use payroll system is ideal for most organizations or businesses with 1 to 1000 employees. Use it as a stand-alone program or integrate it with either of our ledger programs.

CASH LEDGER

This is a full-featured accounting system for businesses or organizations using cash-basis reporting. It can also be used by accountants or other professionals who require "write-up" capability.

WE COULDN'T HAVE SAID IT BETTER

"MultiLedger is ideal for the small business. It's easy to set up and use and has an amazing set of accounting features when compared to other programs that cost more and don't offer much more power. . . . This small-business package is well-conceived and Mac-like to the point of elegance."

MACazine

March 1989 / page 52

"I don't know of any other Mac accounting software which contains so many features and modules for the price. . . . This program [MultiLedger] is packed with features."

Computers in Accounting
January 1989 / page 21

"My favorite all-around accounting program is CheckMark Software's MultiLedger/Payroll set. It was the simplest and most logical program I examined that provided a reasonably full set of accounting capabilities. Its price/performance ratio represents an excellent value."

Macworld

September 1988 / page 169

MultiLedger - \$395.00
Payroll - \$295.00
Cash Ledger - \$195.00

Full-functioning demo disks available
Dealer inquiries welcome

CHECK MARK
SOFTWARE INC.

1520 E. Mulberry / Suite 200
Ft. Collins, Colorado USA 80524
303-484-3541 In Canada 416-731-0744

800-444-9922 ext 82

Reader Service

- ing, Inc., 7030 W. Hillsboro Ave., Tampa, FL 33634; 813/882-8635.
- 795 **Inlx** Natural Intelligence, Inc., 86 Richdale Ave., Cambridge, MA 02140; 617/266-7858.
- 796 **International Symbols** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.

J

- 797 **Japanese Clip Art: Borders** Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705; 415/848-8080.
- 798 **Japanese Clip Art 1: Heaven** Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705; 415/848-8080.
- 799 **Japanese Clip Art 2: Earth** Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705; 415/848-8080.
- 800 **Jasmine DirectPrint** Jasmine Technologies, Inc., 1740 Army St., San Francisco, CA 94124; 415/282-1111.

L

- 801 **La Cie Panther PDX** La Cie, Ltd., 16285 S.W. 85th St., #306, Tigard, OR 97224; 503/684-0143.
- 802 **LaserJet Plus** Hewlett-Packard, 19310 Pruneridge Ave., Cupertino, CA 95014; 800/752-0900.
- 803 **LaserWriter IINT** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.
- 804 **LaserWriter IINTX** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.
- 805 **LaserWriter IISC** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.
- 806 **Lightspeed Color Layout System** Crosfield Lightspeed, 47 Farnsworth St., Boston, MA 02210; 617/338-2173.
- 807 **LZR-1260** Dataproducts Corp., 6200 Canoga Ave., Woodland Hills, CA 91365; 818/887-8000.

Reader Service

- 808 **Mac-Art Library** CompuCraft, 9034 Arrow Grass Way, Englewood, CO 80126; 303/791-2077.
- 809 **MacAtlas EPSF Version** MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530; 609/397-1611.
- 810 **MacAtlas Paint** MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530; 609/397-1611.
- 811 **MacAtlas Presentation Pack** MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530; 609/397-1611.
- 812 **MacAtlas Professional Version** MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530; 609/397-1611, 800/334-4291.
- 813 **MacFontware** Bitstream, Inc., 215 First St., Cambridge, MA 02142; 617/497-6222.
- 814 **MacGallery** Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031; 213/221-6436, 800/876-5665.
- 815 **MacGraphics, Volumes 1-15** GoldMind Publishing, 12155 Magnolia Ave., #3-B, Riverside, CA 92503; 714/785-8685.
- 816 **MacLite** Cambridge North America, 424 Cumberland Ave., Portland, ME 04101; 207/761-3700.
- 817 **MacMatbook, Volumes 1-6** Electronic Publisher, Inc., 215 South St., Excelsior Springs, MO 64024; 816/637-7233.
- 818 **Mac the Knife, Volume 3: Mac the Ripper** Miles Computing, Inc., 5115 Douglas Fir Rd., Ste. I, Calabasas, CA 91302; 818/340-6300.
- 819 **Mac the Knife, Volume 5: People, Places & Things** Miles Computing, Inc., 5115 Douglas Fir Rd., Ste. I, Calabasas, CA 91302; 818/340-6300.
- 820 **MacWrite II** Claris Corp., P.O. Box 58168, Santa Clara, CA 95052; 408/987-7000.
- 821 **MasterJuggler** ALSoft, Inc., P.O. Box 927, Spring, TX 77383-

Reader Service

- 0927; 713/353-4090.
- 822 **McPic, Volume 1** Magnum Software Corp., 21115 Devonshire St., Chatsworth, CA 91311; 818/700-0510.
- 823 **McPic, Volume 2** Magnum Software Corp., 21115 Devonshire St., Chatsworth, CA 91311; 818/700-0510.
- **Medical Application Clip Art, Volume 1** Mac PDS, P.O. Box 85097, Seattle, WA 98105; 206/364-8071.
- 824 **MenuFonts 2** Beyond, Inc., 6069 E. Grant Rd., Tucson, AZ 85712; 602/290-9790.
- **Microsoft Excel** Microsoft Corp., 16011 N.E. 36th Way, Box 7017, Redmond, WA 98073-9717; 206/882-8080.
- **Microsoft Word** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717; 206/882-8080.
- **Microsoft Works** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717; 206/882-8080.
- **Microsoft Write** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717; 206/882-8080.
- 825 **Military Art** DiskArt, P.O. Box 354, San Ramon, CA 94583; 415/820-3734.
- 826 **Military Art** NovaCube, 1704 Tremont Ave., Fort Worth, TX 76107; 817/737-7941.
- 827 **Military Art** Studio Advertising Art, 4305 E. Sahara Ave., #1, Las Vegas, NV 89104; 702/641-7041.
- 828 **MockPackage Plus Utilities** CE Software, Inc., P.O. Box 65580, West Des Moines, IA 50265; 515/224-1995, 800/523-7638.
- 829 **Moonlight Artworks** Hired Hand Design, 3608 Faust Ave., Long Beach, CA 90808; 213/429-2936.
- 830 **MultiClip** Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143; 305/665-4665.
- 831 **MultiDisk** ALSoft, Inc., P.O. Box 927, Spring, TX 77383-0927;

Reader Service

- 713/353-4090.
- 832 **Navy Art** Storm King Technology, Dept. JHW-30608, P.O. Box 185, Wilson, WY 83014; 913/682-3668.
- 833 **NEC SilentWriter LC 890** NEC Information Systems, Inc., 1414 Massachusetts Ave., Boxborough, MA 01709; 508/264-8000.
- 834 **Newsletter Maker** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 835 **Nine to Five** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 836 **Omnilaser 2106** Texas Instruments, Inc., P.O. Box 809063, Dallas, TX 75380-9063; 512/250-4133, 800/527-3500.
- 837 **On Cue** ICOM Simulations, Inc., 648 S. Wheeling Rd., Wheeling, IL 60090; 312/520-4440.
- 838 **Open Prepress Interface** Aldus Corp., 411 First Ave. S, Seattle, WA 98104; 206/622-5500.
- 839 **People** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997, 800/525-1552.
- 840 **Personal LaserPrinter** GCC Technologies, 580 Winter St., Waltham, MA 02154; 617/890-0880.
- 841 **Personal LaserPrinter Plus** GCC Technologies, 580 Winter St., Waltham, MA 02154; 617/890-0880.
- 842 **PictureBook** Loop Software, Inc., Box 1249, Menlo Park, CA 94026; 415/326-4803.
- **PicturePak: Executive & Management Edition** Marketing Graphics, Inc., 4401 Dominion Blvd., #210, Glen Allen, VA; 23060, 804/747-0879.

(continues)

Affordable PostScript™ Typefaces are here!

Now you can afford to own a complete library of PostScript Display and Text typefaces.

**100 Classic PostScript
Display Typefaces
for only \$99⁹⁵.**

Zipatone has been producing dry-transfer lettering and patterns for graphic artists and designers for 35 years.

We know you want a variety of high-quality typefaces at a reasonable price.

And that's why we created the TypeXpress DisplayFont collection: *a hundred of the most popular display typefaces for a hundred dollars.*

Now that's variety at a very reasonable cost.

Each display face has been meticulously crafted in PostScript and has all the characters that appear in the regular font.

And each face will automatically download to programs like Pagemaker, ReadySet-Go and Quark Express.

The catch?

You must order by November 30, 1989 to get this introductory price.

PostScript is a trademark of Adobe Systems, Inc.

TYPEXPRESS

World class Postscript® Typefaces and Graphics
A marketing unit of ZIPATONE, Inc.
150 Fencil Lane Hillside, Illinois 60162

**920 Classy PostScript
Text Typefaces for
only \$99⁹⁵ per family.**

Nine hundred and twenty text faces painstakingly executed in PostScript. Enough variety to keep any graphic artist or designer happy for years. (Well, maybe a few weeks at least.)

More than a thousand kerned pairs in every font. All English and Western European language characters.

And at a price that's between one-third and one-half of what the competition charges.

That's class.

TypeXpress ProFonts are the economical answer for every designer who wants a wide variety of typefaces to choose from --- but doesn't want to go into debt to own them.

Get our **FREE** catalog.

We can't show them all here, so call 1-312-982-6080 today for your free catalog.

Order by November 30, 1989 and get a seven weight family for only \$99.95.

1-800-343-4424

For same day shipping, call 1-800-323-0242 before 1PM Central Time

Reader Service

- **PicturePak: Federal Government Edition** Marketing Graphics, Inc., 4401 Dominion Blvd., #210, Glen Allen, VA 23060; 804/747-0879.
- **PicturePak: Finance & Administration Edition** Marketing Graphics, Inc., 4401 Dominion Blvd., #210, Glen Allen, VA 23060; 804/747-0879.
- **PicturePak: Sales & Marketing Edition** Marketing Graphics, Inc., 4401 Dominion Blvd., #210, Glen Allen, VA 23060; 804/747-0879.
- 843 **PICTures, Volume 1** Ad-Techs, 2505 Glenoaks Ct., Bedford, TX 76021; 817/354-1632.
- 844 **Powermenus** Magic Software, 1602 Cascio Dr., Bellevue, NE 68005; 402/291-0670, 800/342-6243.
- 845 **Printworks** SoftStyle, 660 Kalaniana'ole Hwy., Honolulu, HI 96825; 808/396-6368.
- 846 **ProArt Professional Art Library: Business** Multi-Ad Services, 1720 W. Detweiller Dr., Peoria, IL 61615; 309/692-1530.
- 847 **ProArt Professional Art Library: Holidays** Multi-Ad Services, 1720 W. Detweiller Dr., Peoria, IL 61615; 309/692-1530.
- 848 **ProArt Professional Art Library: Sports** Multi-Ad Services, 1720 W. Detweiller Dr., Peoria, IL 61615; 309/692-1530, 800/447-1950.
- 849 **Publishers Resource** Electronic Pen Ltd., 4131 Cimarron Dr., Clarkston, GA 30021; 404/296-8623.
- 850 **Pyro** Fifth Generation Systems, Inc., 11200 Industripark Blvd., Baton Rouge, LA 70809; 504/291-7221.

Q

- 851 **QMS-PS 810** QMS, Inc., 1 Magnum Pass, Mobile, AL 36618; 205/633-4300, 800/631-2692.
- 852 **QMS-PS 820** QMS, Inc., 1 Magnum Pass, Mobile, AL 36618; 205/633-4300,

Reader Service

- 800/631-2692.
- 853 **QMS-PS 1500** QMS, Inc., 1 Magnum Pass, Mobile, AL 36618; 205/633-4300, 800/631-2692.
- 854 **QuickKeys** CE Software, Inc., P.O. Box 65580, West Des Moines, IA 50265; 515/224-1995.
- **QuickFolder** Shareware.
- 855 **QuickLetter** Working Software, Inc., P.O. Box 1844, Santa Cruz, CA 95061-1844; 408/423-5696, 800/331-4321.
- 856 **Qume ScripTen** Qume Corp., 500 Yosemite Dr., Milpitas, CA 90035; 408/942-4000, 800/223-2479.

R

- 857 **Real Art: Children** Brainstorm Design, 418 S.W. Washington, #404, Portland, OR 97204; 503/227-6250.
- 858 **Real Art: Just Hands** Brainstorm Design, 418 S.W. Washington St., #404, Portland, OR 97204; 503/227-6250.
- 859 **Real Art: Portraiture of Men** Brainstorm Design, 418 S.W. Washington, #404, Portland, OR 97204; 503/227-6250.
- 860 **Real Art: Portraiture of Women** Brainstorm Design, 418 S.W. Washington St., #404, Portland, OR 97204; 503/227-6250.
- **Rebound** Shareware.
- 861 **Religious Art Portfolio** Medina Software, Inc., P.O. Box 521917, Longwood, FL 32752; 407/260-1676.
- 862 **Report Maker** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 863 **ResumeExpert** A Lasting Impression, Inc., 49 Thornberry Rd., Winchester, MA 01890; 617/721-2037.

S

- 864 **Scitex Visionary** Scitex America Corp., 8 Oak Park Dr., Bedford, MA 01730; 617/275-8300, 800/858-0489.

Reader Service

- 865 **Screen Gems** Microseeds Publishing, Inc., 7030 W. Hillsboro Ave., Tampa, FL 33634; 813/882-8635.
- **SFSrollInit** Shareware.
- **SFVol INIT** Shareware.
- 866 **SmArt Family/SmArt Foods** Pleasant Graphic Ware, Inc., P.O. Box 506, Pleasant Hill, OR 97455; 503/345-5796.
- 867 **SmArt Mouse** Pleasant Graphic Ware, Inc., P.O. Box 506, Pleasant Hill, OR 97455; 503/345-5796.
- **SoundMaster** Shareware.
- 870 **Space Art** Storm King Technology, Dept. JHW-30608, P.O. Box 185, Wilson, WY 83014; 913/682-3668.
- 871 **SPAMM** Bravo Technologies, Inc., P.O. Box 10078, Berkeley, CA 94709-0078; 415/841-8552, 800/345-2888.
- 872 **Special Issue** Studio Advertising Art, 4305 E. Sahara Ave., #1, Las Vegas, NV 89104; 702/641-7041.
- **Staircase** Freeware.
- 873 **Stepping Out II** Berkeley System Design, Inc., 1708 Shattuck Ave., Berkeley, CA 94709; 415/540-5536.
- 874 **Suitcase II** Fifth Generation Systems, Inc., 11200 Industripark Blvd., Baton Rouge, LA 70809; 504/291-7221.
- 875 **SunShine Graphics Library** SunShine Graphics, Box 4351, Austin, TX 78765; 512/453-2334.
- 876 **SuperCard** Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126; 619/695-6956.
- **SuperClock** Freeware.
- **SuperLaserSpool** SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043; 415/964-8884.
- 877 **Super 3D** Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126; 619/695-6956.
- 878 **Symantec Utilities for the Macintosh** Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 408/253-9600.

Reader Service

T

- 879 **Talking Moose** Steve Halls, 11135 50th Ave., Edmonton, Alberta, Canada T6H 0J1.
- 880 **Team Sports** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997.
- 881 **Tempo II** Affinity Microsystems, Ltd., 1050 Walnut St., #42, Boulder, CO 80302; 303/442-4840, 800/367-6771.
- 882 **Thunder II** Electronic Arts, P.O. Box 7530, San Mateo, CA 94403; 415/571-7171, 800/245-4525.
- 883 **TOM/INIT** Advanced Interface Programming, 1224 Second Ave., Nebraska City, NE 68410; 800/622-8674.
- 884 **Totem Clip-Art** Totem Graphics, Inc., 5109-A Capitol Blvd., Tumwater, WA 98501; 206/ 352-1851.
- 885 **Travel** Metro ImageBase, Inc., 18623 Ventura Blvd., #210, Tarzana, CA 91356; 818/881-1997, 800/525-1552.
- 886 **TurboPS/300** NewGen Systems Corp., 17580 Newhope St., Fountain Valley, CA 92708; 714/641-8600.
- 887 **TurboPS/400** NewGen Systems Corp., 17580 Newhope St., Fountain Valley, CA 92708; 714/641-8600.
- 888 **Typographers' Ornaments: Volumes 1-4** Underground Grammarian, P.O. Box 203, Glassboro, NJ 08028; 609/589-6477.

U

- 889 **United Syndicated Artwork** United Syndicated Artwork, 9430 Topanga Canyon Blvd., #102, Chatsworth, CA 91311; 818/341-6141, 800/262-8724.
- 890 **Unitize** Rainbow Bridge Software, Inc., 4243 Hunt Rd., #210, Cincinnati, OH 45242; 513/984-6848.
- 891 **U.S. Presidents** Visatex Corp., 1745 Dell Ave., Campbell, CA (continues)

America's source for MacProducts

1 MB SIMM's

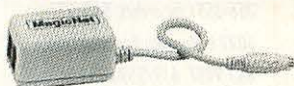


1MB SIMM's\$119
Available now. Lifetime
Manufacturer's Warranty!
256K SIMM's\$59

PRINTERS

Qume ScriptTEN\$3195
Qume CrystalPrint\$3195
ColorScript 100call
GCC Printerscall
Seikosha\$235

MAGIC NET



100% Flash Box, Phone Net,
Local Talk compatible
SALE.....\$19.95
STAR Controller.....\$1149.00

SOFTWARE

Adobe Fonts	Save 33%
Aldus Freehand	339.00
FileMaker II	225.00
Fluent Laser Fonts	53.00
Fox Base +	205.00
Illustrator '88	325.00
LightSPEED C	169.00
MS Word 4	249.00
Mac Link +	139.00
MacDraw II	375.00
MacWrite II	189.00
Managing Your Money	129.00
Master Juggler	call
Master Tracks Pro	269.00
Mathematica	call
MiniCAD +	519.00
MS Works 2.0	199.00
MultiClip	35.00
PageMaker 3.1	379.00
Persuasion	355.00
Quark XPress 2.1	475.00
Quicken	38.00
QuickKeys	65.00
Red Ryder 10.4	54.00
Retrospect	165.00
Smart Art	85.00
SmartForm	305.00
Streamline	235.00
Suitcase II	48.00
SUMSAM	59.00
SuperCard	137.00
SuperPaint 2.0	129.00
Swivel 3D	289.00
TOPS Mac/IBM	165.00/call
Virex	68.00
Wall Street Investor	call
WillMaker	32.00
WingZ	call
WriteNow 2.0	139.00

020/030 RAILGUN



16 mhz 68020.....\$499
25 mhz 68020.....\$895
Faster than Radius, Dove,
Irwin. Comes with Smart
Cache SCSI Disk Cache.

MAGIC DRIVES

Internal External

20 megabyte\$389\$579
30 megabyte.....\$399\$599
Quantum 40.....\$559\$639
Quantum 80.....\$789\$879
45 megabyte.....\$519\$649
60 megabyte.....\$599\$699
80 megabyte\$699\$799
91 megabyte\$850\$950
150 mb CDC ..\$1395..\$1495
300 mb CDC ..\$1995..\$2350
600 mb CDC ..\$3550..\$3650

HARDWARE

MacFax 9600	449.00
ReliSys Fax/Modem/Scanner	1189.00
A+ Mouse	63.00
A+ Mouse (ADB)	85.00
Abaton Interfax	365.00
Cutting Edge 105 Keybd	115.00
Datadesk 101 Keyboard	142.00
FastKeys	Call
800 K Drive/1.4 mb	175.00/Call
DaynaTalk	Call
Grappler Interfaces/Spoolers	Call
Kraft Quick SE, +	35.00
Lightning Scan	399.00
Thunder Scan 6.0	179.00
TOPS Flash Box	129.00
MIDI Interface	87.50
Seikosha Printer	234.00
Shiva Net/Modem v2400	459.00
ScanMan	379.00
TurboBridge	375.00
Turbomouse 3.0	119.00

MEDIA CONVERSION

Thousands of formats supported
3.5", 5.25", 8" and Mag Tape

MACINTOSH™ SYSTEMS

MacProducts USA carries all Macin-
tosh™ systems and peripherals. We
will configure a system to meet your
needs. Call us today for current prices.

MAGICVIEW 19

19" B&W Monitors.

2 Page Display
72 dpi, 78 hz. Includes 19"
monitor and card for +, SE,
SE/30, II, IIfx, IIfx.....\$999

VIDEO PRODUCTS

13" & 14" 100% Apple Compatible
8 bit color card\$449
19" 8 bit color card\$949
32 Bit color card.....\$2995
RasterOps · Sigma Designs
Cornerstone · Taxan · PCPC
Viking Call for prices.

REMOVABLE MEDIA

60 mb Tape Backup.....\$695
150 mb Tape Backup ..\$895
45 mb Removable.....\$995
45 mb Cartridges.....\$95
600 mb Read/Write
Optical Drive.....\$3750
1.2 gig Tape Backup..\$3995

ACCESSORIES

Disks:	DS
Sony Boxed (10)	1.45
Sony Bulk (50)	1.15
MacDisk Bulk (50)	.79
D/S Bulk Colored (50)	.99
High Density Disks	2.90
Black Ribbons	3.00
Colored Ribbons	3.50
Disk File/30/80	7.00/12.00
Fanny Mac QT	59.00
Hard Top Covers	Call
ImageWriter LQ Ribbons	15.00
ImageWriter LQ 4-Color	25.00
MacGuard - Surge -	25.00
Mac Plus, SE Bag	59.00/69.00
Mouse Cleaner 360	12.00
Teak Disk Box 50/100/150	16/25/33

BOARDS/UPGRADES

Siclone 68030	call
Daystar 33/030 II/IIfx	4580.00
Dove Upgrades	call
Dove Marathon 030	call
MacSprint	229.00
Magic SCSI	69.00
EtherNet	call
68881, 68882 Co-Processors	call
PMU - 68851	299.00
512K-1024 Upgrade	149.00
128K-512K Upgrade	149.00
128K-1024K Upgrade	295.00
800K Drive & ROMS	299.00

SMART CACHE

- SCSI Disk Cache
- Cuts 30-50% off the access
time of any SCSI hard drive
- Tracks your history
and optimizes using
64 caching algorithms
- Write through cache for
maximum data integrity

\$99

MAGIC MODEM



100% Hayes Compatible
Auto Dial/Auto Answer
2400/1200/300 Baud
2-Year Warranty\$109
Red Ryder 10.4\$54

ORDERING

Orders ONLY: 1-800-622-3475
Information: 1-512-343-9441
International: 1-512-264-0353
FAX: 1-512-343-6141
International FAX: 1-512-264-0354
Tech Support: 1-512-343-6133

Hours: 7am - 10pm, M-F,
10am - 6pm Sat-Sun CST
Tech Support Hours: 9am - 5pm,
M-F CST

Minimum Order: \$40.00

Payment:



Visa, MasterCard, American
Express, Optima (No surcharge),
Checks, C.O.D., and Company &
Institution P.O.s. Net 15.

Tax: Texas residents only, add
7 1/2% sales tax.

Prices and items are subject to
change and availability.

Terms: You are not charged until
your order is shipped. Returns
may be subject to a restocking fee.

Shipping: Minimum \$4.50 --
Airborne, UPS Next Day & 2nd
Day Air, US Mail.

Leasing: Available on orders over
\$2500. Call for more information.

MacProducts USA carries over
3500 products for the Mac, so
call for products not listed.
Call for a free catalog.

MacProducts USA

8303 Mopac Expressway • Suite 218 • Austin, Texas 78759 • USA • 1-800-622-3475

1-800-MAC-DISK

Reader Service

95008; 408/866-6596.



- 892 **Vaccine** CE Software, Inc.,
P.O. Box 65580, West
Des Moines, IA 50265;
515/224-1995.
- 893 **Virtual** Connectix Corp., 125
Constitution Dr., Menlo Park,
CA 94025; 415/324-0727.
- 894 **Vision** Opcode Systems, Inc.,
1024 Hamilton Ct., Menlo Park,
CA 94025; 415/321-8977.
- 895 **Vivid Impressions: Spécial
Events** Casady & Greene, Inc.,
P.O. Box 223779, Carmel, CA
93922; 408/624-8716.
- 896 **VT600W** Varityper, 11 Mt.
Pleasant Ave., East Hanover, NJ
94545; 201/887-8000.



- 897 **Weekend Sports Metro** Image-
Base, Inc., 18623 Ventura Blvd.,
#210, Tarzana, CA 91356;
818/881-1997.

Reader Service

- 898 **WetPaint: All the People** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 899 **WetPaint: Animal Kingdom** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 900 **WetPaint: Classic Clip Art** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 901 **WetPaint: For Publishing** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 902 **WetPaint: Industrial Revolution**
Dubl-Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 903 **WetPaint: Old Earth Almanac** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 904 **WetPaint: Printer's Helper** Dubl-
Click Software, Inc., 9316

Reader Service

- Deering, Chatsworth, CA 91311;
818/349-2758.
- 905 **WetPaint: Special Occasions** Dubl-
Click Software, Inc., 9316
Deering, Chatsworth, CA 91311;
818/349-2758.
- 906 **Works of Art: Assortment Series
Sampler** Springboard Software,
Inc., 7808 Creekr Ridge Circle,
Minneapolis, MN 55435;
612/944-3915.
- 907 **Works of Art: Education Series
Sampler** Springboard Software,
Inc., 7808 Creekr Ridge Circle,
Minneapolis, MN 55435;
612/944-3915.
- 908 **Works of Art: Holiday Series
Sampler** Springboard Software,
Inc., 7808 Creekr Ridge Circle,
Minneapolis, MN 55435;
612/944-3915.
- 909 **Works of Art: Laser Art Business
Selection** Springboard Software,
Inc., 7808 Creekr Ridge Circle,
Minneapolis, MN 55435;
612/944-3915.

Reader Service

- 910 **WriteNow** T/Maker Co., 1390
Villa St., Mountain View, CA
94041; 415/962-0195.



- 911 **Year of the Dragon 88** Qualitas
Trading Co., 6907 Norfolk
Rd., Berkeley, CA 94705;
415/848-8080.

Public domain software, freeware, and shareware are available through online information services; user groups (call 800/538-9696 ext. 500 for information on a local user group); and mail-order clearing-houses such as Budgetbytes (800/356-3551 for orders, 913/271-6022 in Kansas), Educomp (800/843-9497, 619/259-0255 in California), and the Public Domain Exchange (800/331-8125, 408/496-0624 in California).

America is worth fighting for.



From the Atlantic to the Pacific, the Arctic to the Gulf, our land is constantly under attack from the polluters and despoilers.

That's why Sierra Club Legal Defense Fund attorneys are pursuing dozens of cases nationwide in defense of wildlife, rare habitats, the air we breathe and the water we drink.

Most of our support comes from individual contributors like you. Please help us win. Because America is worth fighting for.

I enclose my tax-deductible contribution to save what I love most about America. Send me your quarterly newsletters in return.

NAME

ADDRESS

CITY

STATE

ZIP

Sierra Club Legal Defense Fund
2044 Fillmore, San Francisco, CA 94115

20 MB External Hard Drive \$399

Hard Drives

Beverly Hills

20 Megabyte External \$399

140 Megabyte External \$1198

CMS

(External Subsystem for all Macs)

SD 20 Megabyte \$448

SD 30 Megabyte \$498

SD 45 Megabyte \$598

SD 60 Megabyte \$698

SD 80 Megabyte \$798

SD 140 Megabyte \$1248

Removable 44 Megabyte \$998

CMS Internal Subsystems

(For SE/SE 30/II/IIx/IICX)

PRO 30 Megabyte \$398

PRO 45 Megabyte \$478

PRO 40 Megabyte (25 ms) \$548

PRO 80 MB (Mac II/IIx only) \$698

PRO 100 Megabyte \$878

PRO 140 MB (Mac II/IIx only) \$998

*Call for larger capacity drives

Everex/EMAC

External 20D \$498

Impact 40 Plus \$748

Tape Back-up System

CMS 60 Megabyte External

TS-60 \$698

Cutting Edge

800K External Drive \$149

Logitech

Hand-Held Scanner \$348

FAX Products

Abaton InterFax/4800 \$319

Orchid

Mac Fax/9600 \$499

Dot Matrix Printer



Seikosha

SP 1000 AP \$215

Imagewriter Compatible

EPSON LX-810

9 pin, 180 cps \$199

Grappler C/Mac \$79

EPSON LQ-510*

24 pin, 180 cps \$339

EPSON LQ-850 Call

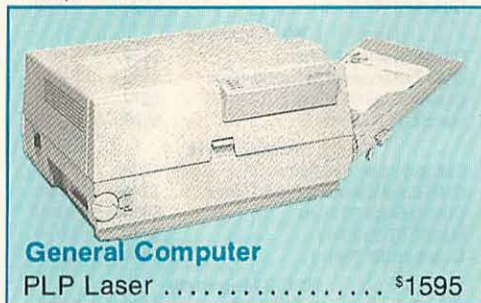
EPSON LQ-1050 Call

EPSON LQ-2550 Call

EPSON LQ Printer Software \$68

(Interface for all LQ series printers)

*Requires serial card



General Computer

PLP Laser \$1595

PLP Plus \$1695

Business Laser Plus \$2998

G C C Write Move

Portable ink-jet printer \$519

Computer professional
since 1975.



1-800-426-8166

From Beverly Hills
(213)273-3710

Fax Machine
(213)675-2522

279 South Beverly Drive, Suite 1200, Beverly Hills, California 90212

Color Monitors

E-Machines

Big Picture T-16 color \$2598

Big Picture TX-16 color \$3398

Rastor Ops

Colorboards Call

Monitors Call



Magnavox 14" Color Mac Display

640 x 480 Resolution \$509

Fine Dot Pitch, Tilt & Swivel Base

NEC

Mac Sync Color \$598

Monochrome Monitors

E-Machines

Big Picture 17" \$1298

Big Picture Z21 \$1798

Big Picture Z21 IQ \$2598

Monitorm

Viking 2 19" \$1498

Viking 2400 24" \$1898

Sigma Design

Pageview Plus/SE 15" \$798

Silverview 21" \$1598

Datadesk Keyboard

Mac 101 or ADB version \$129

Farallon

MacRecorder Sound System \$129

PhoneNet Connectors \$33

Modems

Beverly Hills 2400 \$129

Everex MD 2400 \$199



- Plain and simple. Hardware; your satisfaction guaranteed or your money back.
- Software: defective software will be replaced. Manufacturers policies prohibit us from offering refunds on opened software.
- We accept most major credit cards with no surcharge added.

- Your credit card is not charged until we ship.
- Please allow 10 days for personal and company checks to clear.
- C.O.D. orders accepted.
- We gladly accept purchase orders from most major institutions.
- International orders accepted.

- California, Texas, Georgia and Arizona residents please add the appropriate local sales tax.
- To place orders call Monday thru Friday 7AM to 6PM P.S.T..
- Prices and availability subject to change.

SHIPPING

All items in stock will ship in 24 hours. We offer daily service from Federal Express, UPS, U.S. Postal Service. Call for handling and shipping fees. Minimum shipping charge \$4.00.

Circle 5 on reader service card

MacLandTM

The Lowest Prices with Technical Support, Too!

WARNING: Beware of money-back offers on hardware! MacLand sells only NEW, NEVER USED merchandise. We will not send you re-packaged, slightly-used hard disks.

Prices are good through October 1989

Externals

	Reg. Price	Sale Price
20 Megabyte		
Caché Systems 20 65ms	\$549.	\$429.
CMS Enhancements 20 32ms	\$549.	\$429.
Cutting Edge 20 65ms	\$529.	\$419.
MacBEST 20 65ms	\$499.	\$429.

30 Megabyte		
Caché Systems 30 28ms	\$559.	\$489.
CMS Enhancements 30 32ms	\$589.	\$489.
Cutting Edge 32 30ms	\$579.	\$484.
MacBEST 30 28ms	\$549.	\$499.

40 Megabyte		
Caché Systems 45 28ms	\$629.	\$549.
CMS Enhancements 45 32ms	\$649.	\$589.
Cutting Edge 47 30ms	\$649.	\$539.
MacBEST 40 28ms	\$599.	\$569.
Quantum 40* 19ms	\$699.	\$599.

60 Megabyte		
Caché Systems 60 28ms	\$729.	\$579.
CMS Enhancements 60 40ms	\$749.	\$689.
Cutting Edge 60 28ms	\$699.	\$599.
MacBEST 60 28ms	\$729.	\$649.

80 Megabyte		
Caché Systems 80 28ms	\$849.	\$679.
CMS Enhancements 81 28ms	\$899.	\$779.
Cutting Edge 85 28ms	\$725.	\$699.
MacBEST 80 28ms	\$849.	\$749.
Quantum 80* 19ms	\$949.	\$849.

90-100 Megabyte		
CMS Platinum PD 90 18ms	\$1,049.	\$899.
MacBEST 105 18ms	\$939.	\$879.
Quantum 105* 19ms	\$1,099.	\$999.

140-173 Megabyte		
Caché Systems 150 16ms	\$1,499.	\$1,299.
Caché Systems 150/150 Tape 16ms	\$2,499.	\$2,159.
CMS Enhancements 170 18ms	\$1,799.	\$1,589.
MacBEST 180 18ms	\$1,749.	\$1,659.

300-600 Megabyte		
CMS Enhancements PD 300 16ms	\$2,349.	\$2,179.
CMS Enhancements PD 600 16ms	\$2,999.	\$2,839.
MacBEST 300 16ms	\$2,349.	\$2,179.

SE Internals

30 Megabyte		
Caché Systems 30 28ms	\$425.	\$375.
CMS Enhancements Pro 30 38ms	\$479.	\$389.
Cutting Edge 32 30ms	\$479.	\$395.
MacBEST 30 28ms	\$449.	\$399.

40 Megabyte

Caché Systems 45 28ms	\$499.	\$449.
CMS Enhancements Pro 45 32ms	\$569.	\$469.
Cutting Edge 47 30ms	\$529.	\$444.
MacBEST 45 28ms	\$499.	\$465.
Quantum 40* 19ms	\$599.	\$499.

80 Megabyte

Quantum 80* 19ms	\$889.	\$725.
------------------	--------	---------------

100 Megabyte

MacBEST 105 25ms	\$949.	\$859.
Quantum 105* 19ms	\$999.	\$899.

Mac II, IIX, IICX Internals

40 Megabyte

Caché Systems 45 28ms†	\$499.	\$449.
CMS Enhancements Pro 45 32ms†	\$569.	\$469.
Cutting Edge 47 30ms	\$529.	\$444.
MacBEST 45 28ms	\$499.	\$479.
Quantum 40* 19ms†	\$599.	\$499.

60 Megabyte

Caché Systems 60 28ms	\$639.	\$499.
CMS Enhancements Pro 60 40ms	\$649.	\$539.
Cutting Edge 60 28ms	\$679.	\$489.
MacBEST 60 28ms	\$629.	\$549.

80 Megabyte

Caché Systems 80 28ms	\$729.	\$575.
CMS Enhancements Pro 80 28ms	\$749.	\$669.
Cutting Edge 80 28ms	\$689.	\$599.
MacBEST 80 28ms	\$749.	\$679.
Quantum 80* 19ms†	\$889.	\$725.

90-100 Megabyte

CMS Enhancements PL 90 18ms	\$999.	\$815.
MacBEST 105 25ms	\$949.	\$859.
Quantum 105* 19ms†	\$999.	\$899.

150-173 Megabyte

Caché Systems 150 16ms	\$1,429.	\$1,199.
CMS Enhancements 170 16ms	\$1,699.	\$1,499.
MacBEST 150 17ms	\$1,499.	\$1,279.
MacBEST 180 18ms	\$1,649.	\$1,559.

300 Megabyte

CMS Enhancements PL 300 16ms	\$2,199.	\$1,889.
MacBEST 300 17ms	\$1,999.	\$1,899.

600 Megabyte

CMS Enhancements PL 600 16ms	\$2,999.	\$2,779.
MacBEST 600 16ms	\$3,599.	\$2,775.

Removables Tape Back-Ups

44 Megabyte Removables		
CMS Enhancements 44 25ms	\$1,299.	\$999.
Cutting Edge 44 25ms	\$1,149.	\$939.

60 Megabyte Tape Back-Ups

Caché 150	\$1,199.	\$979.
CMS Enhancements 60	\$749.	\$699.

SyQuest Removable Cartridges

(Will fit Any 44 Removable Drive)	\$119.	\$94.
-----------------------------------	--------	--------------

Printers

General Computer		
Business LaserPrinter	\$3,399.	\$2,999.
Personal LaserWriter	\$1,699.	\$1,549.
Write Move	\$599.	\$519.
Qume		
Crystal Print Publisher	\$3,299.	\$3,199.
ScriptTEN Postscript Printer	\$3,499.	\$3,299.

Scanners

Abaton 300/S	\$1,299.	\$1,179.
Abaton 300/GS	\$1,699.	\$1,475.
Logitech ScanMan Hand Scanner	\$449.	\$342.
Microtek MSF 300QS	\$1,439.	\$1,299.
Microtek MSF 300GS	\$1,699.	\$1,599.

Monitors

E-Machine Monitors		Call
Magnavox 14" Color Mac II	\$599.	\$505.
Radius Full Display W/Card	\$1,299.	\$1,099.
Radius Two Page Display W/Card	\$1,749.	\$1,599.
Radius Gray Scale	\$2,595.	\$2,399.
Radius 8 Bit 19" Color	\$4,899.	\$4,499.
RasterOps Monitors		Call
Samsung 15" Full Page Monitor & Card	\$895.	\$649.

Accelerator Boards

MaraThon 020 MSE 1	\$469.	\$412.
Radius 16 for + or SE	\$739.	\$599.
Radius 25 for SE	\$1,249.	\$999.

Memory Upgrades

MacSnap 524S	\$279.	\$235.
MacSnap 548S	\$529.	\$472.
One Meg SIMMS		Call

SAME DAY SHIPPING on all in stock items if orders are placed by 3 PM Mountain Standard Time.

ALL DRIVES are preformatted and tested by MacLand technicians.

All hard disk drives carry a manufacturers one year warranty except for the *Quantum drives, which have a manufacturers two year warranty.

†IICX Compatible

For Ordering and Technical Support Call 1-800-333-3353

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.



5006 South Ash Avenue, Suite 101 Tempe AZ 85282 (602) 820-5802



Circle 264 on reader service card



Service on a Silver Platter...
and
FREE 2nd-Day Air!!

SOFTWARE

Abacus Concepts Statview II...	338
Acius 4th Dimension.....	398
Ashton-Tate FullWrite Prof.....	266
Chang Labs C.A.T. 2.0.....	224
Cricket Presents.....	284
Deneba Canvas...!!SALE!!	157
Electronic Arts Studio/8.....	315
Farallon ScreenRecorder.....	134
Fox Fox Base+/Mac.....	199
HJC Virex.....	68
Informix Wingz.....	259
Innovative Data Dreams.....	271
Letraset Ready, Set, Go!.....	273
LEXpertise MacProof.....	114
MECA Managing Your Money.....	124
Microsoft Excel.....	244
"Excel: Spreadsheet for Power Users"	
File 2.0.....	136
PowerPoint 2.1.....	258
Word 4.0.....	247
Works 2.0.....	188
"Works: Great Value for the Dollar"	
ProVUE Panorama.....	205
Silicon Beach Superpaint 2.0.....	122
"THE Choice Among Paint Programs"	
T/Maker WriteNow II.....	108
WordPerfect WordPerfect.....	188

HARDWARE

CMS MacStack 20.....	529
"The Best Selling Hard Disk"	
Cutting Edge ADB Keyboard.....	144
Hayes Smart Com II.....	87
SmartModem-1200.....	298
Kensington Turbo Mouse ADB.....	110
Rodime 20 Plus.....	515
45 Plus.....	679
Sun Micro InBox Start.Kit 2.2.....	159
TOPS-Mac.....	147
U.S. Robotics Courier 1200.....	189

CALL FOR MORE GREAT PRICES!!

- MC and VISA accepted no charge.
 - FREE 2nd-Day Air. Overnight Del. available. Continental U.S. only.
 - No Sales Tax (except OK).
 - Your card is not charged until your order is shipped.
 - All U.S. shipments insured at no cost.
 - 120 Day Limited Warranty.
 - Corporate orders welcome.
 - Prices and policies subject to change without notice.
 - Items subject to availability.
 - Customer Service & Technical Support Guaranteed.
- Box 8186 • Altus, OK 73522 • (405) 477-3777

MacSystems

1-800-942-6227 Ex. 20
Hours: Mon-Sat 8 AM - 9 PM EST

Circle 222 on reader service card

SONY

3 1/2" DS
11⁹⁵
PER BOX

3 1/2" HD
28⁹⁵
PER BOX

Bulk Diskettes

	PER EA Min. 50
3.5" SS - .94	
3.5" DS - .96	
3.5" HD - 2.64	

KAO

Media from the Surface Scientists

3.5" DS
10⁶⁵
PER BOX

"COLORED"
3.5" DS
12²⁰
PER BOX

BULK CALL

3M

Authorized Distributor: Magnetic Media Division

5 1/4" DD
6²⁵
PER BOX

5 1/4" HD
11³⁰
PER BOX

3 1/2" DS
11⁹⁵
PER BOX

3 1/2" HD
28⁹⁵
PER BOX

Diskette Connection

- Delaware 1-800-451-1849
P.O. BOX 10247, WILMINGTON, DE. 19850
- Oklahoma 1-800-654-4058
P.O. BOX 1674, BETHANY, OK. 73008
- Nevada 1-800-621-6221
P.O. BOX 12396, LAS VEGAS, NV. 89112

Minimum order \$2000 "No Surcharge on Visa MasterCard." COD orders add \$300. Surface Shipping UPS add \$400 per 100 for 3 1/2" or 5 1/4", add \$400 per 100 for 8". U.S. Mail delivery add 9% "Prices subject to change without Notice."

FAX (405) 495-4598

October Specials

PowerMath II: \$99
for 128K - Ilcx, 30 day MBG

Seagate Internals:

for SE - Ilcx, 40 ms., 1 Yr. warranty,
incl: software & cables. 30 Day MBG

20 MB	\$349
30 MB	375
50 MB	439

Join with Our Other Satisfied Corporate Customers:

Lockheed • General Dynamics • NASA • Eastman Kodak • NBC 20/20 • Procter & Gamble • Florida Power & Light • Fingerhut • Texas A & M • Northern Telecom • Trout Creek Architects • Purdue, Rice, Clemson, Cornell, Penn State, Baylor, Vanderbilt, Harvard, Yale, Notre Dame, Texas, Johns Hopkins, & more Universities and Colleges • Sears Roebuck & Co. • Peat, Marwick & Mitchell • Prudential-Bache • Nordica Intl. • Telecheck • AT&T • Celestial Seasonings • Rio Grand Transit • Business Land • Lunar Radiation • State of California • Consolidated Press • Schlumberger Well Service • U.S. Sprint • Welex • Naval Aviation Supply • French Trade Comm. • Century 21 Admiralty • Mobil Oil • Aeroflow Industries • Amway • LA Dept. of Water & Power • NBC • Olan Mills • Chevron • Texas Instruments • NYMEX Information Resources • Smith Barney • Sailspare Design • Union Texas • American Express • Exxon Carribean • KRON Television • Kinko's • Metro Intl. • Delta Airlines • Unocal • Westinghouse • Holiday Inn • Alcoa • Shearson Lehman • Apollo Computer • Lyondell Chemical • Arthur Anderson Co • General Mills Inc. • Digital Equipment Corp. • Honeywell Inc. • 3 Com ... and Many More.

There's not enough Room to List Our Vast Product Line of Macintosh Hardware & Software Here ... So Let us Send You Our Catalog ...



Software Library

Since 1985

For Your FREE Macintosh Business Solutions, CALL:

800 847-5775

Circle 258 on reader service card

Mac Inker

NEVER BUY ANOTHER RIBBON

Mac Inker™, the original, automatic ribbon re-inker. Mac Inker (model 234IM) re-inks Imagewriter I/II black & single color cartridges. The Universal Mac Inker re-inks hundreds of cartridge types (including the Imagewriter LQ, one color and multicolor) with suitable adapters.

Each Mac Inker shipped complete with free ink bottle, reservoir cover and ink dispenser.



\$42.00

Proprietary, extra dark, dot matrix, lubricant ink yields better than new print quality and extends printhead life. New feltless reservoir for precise ink metering. Average number of re-inkings per cartridge is 60-100. With the optional Multicolor Adapter (model M422, \$40.00) your Mac Inker re-inks 4-color Imagewriter II cartridges. Full range of accessories available, inks & cartridges, indelible ink, heat transfer etc. Colors: red, green, blue, yellow, purple, brown, orange, silver, gold. **Free catalog.**

PRICES	Imagewriter I/II Mac Inker (model 234IM)	42.00
	Multicolor Adapter (model M422)	40.00
	Universal Mac Inker (model 234U)	68.50
	Heat Transfer Adapter	25.00
	Imagewriter cartridge	3.15
	Imagewriter LQ cartridge	14.00
	Extra ink bottle	3.00
	Shipping	4.50
	HT cartridge	9.00
	4-color	10.00
	4-color LQ	20.00
	pint	18.50

Special Offer: Order for more than \$60.00 and say "I saw it in MacWorld" and get a free mousepad. Order for more than \$100.00 and get a free key-beeper with flashlight combined, or get an accurate LCD electronic pedometer and calculator for only \$15.00.

LightFax 9624

9600 BPS FAX and 2400 BPS MODEM

High speed Fax and 2400 baud Modem in one compact unit. 9600 baud fax (fully Group 3 compatible) for fast transmission and lower telephone bills. Fax directly from your application or from text /graphics editor.

Software features include Scheduled Sending, Broadcasting, NameCard Data Management, File Queuing, Choice of Standard or Fine Mode and many more.

Full front panel control lights display precisely the status of the communication and whether you are in fax or modem mode. Superb quality of transmitted fax, superior to conventional fax machines. Modem (100% Hayes compatible) available via software toggle switch, 2400/1200/300 baud speeds. Cable and software included for fax and modem.



Free "Facts on Faxes" bulletin available.

\$699.00

LightFax 9624 (includes Fax & Modem Software)	699.00
Remote Power Center	199.00
9600 baud V.32 9600/2400/1200 modem (NEW PRODUCT)	899.00

PRICES

Order Toll Free 800-547-3303 In Oregon (503) 626-2291

fax (503) 643-5379 - telex 4949559 CF - AppleLink D0438

Computer Friends, Inc., 14250 NW Science Park Drive, Portland OR 97229

Circle 61 on reader service card.

Together At Last...

EPSON® and Macintosh™

Macintosh Users Are No Longer Tied to Expensive ImageWriter Printers

Now Macintosh users can take advantage of the special paper-handling features and the affordable prices of Epson printers.

Macintosh Plus and LQ-510 or LQ-1050 create letter quality printing for a superior value!

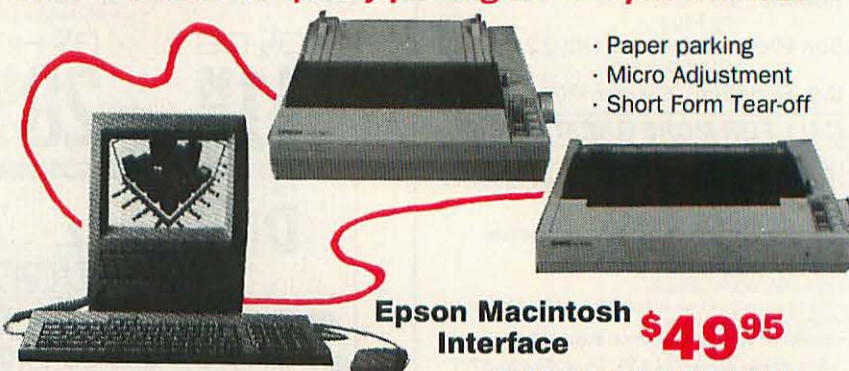
The Epson LQ-510 or LQ-1050 offers Macintosh users superior value for **SIGNIFICANTLY LESS** than the ImageWriter II or ImageWriter LQ.

NARROW CARRIAGE
LQ-510 vs. ImageWriter II

LQ-510	24-pin	60 cps -LQ	*\$369
			w/serial interface
ImageWriter II	9-pin	Letter Quality Not Available	*\$595 MSRP

WIDE CARRIAGE
LQ-1050 vs. ImageWriter LQ

LQ-1050	24-pin	90 cps LQ	MUCH, MUCH LESS!!!
ImageWriter LQ	27-pin	90 cps LQ	*\$1399 MSRP



- Paper parking
- Micro Adjustment
- Short Form Tear-off

Epson Macintosh Interface \$49.95

Call Toll Free 7 - 7 M-F, 9-2 Sat.

800-872-3539

Min. Order \$100. Prices and specifications are subject to change without notice

USA★FLEX


135 N. Brandon Drive, Glen Ellyn, IL 60139

EPSON®
WHEN YOU'VE GOT AN EPSON,
YOU'VE GOT A LOT OF COMPANY™

©Copyrighted 1989 Epson America, Inc. Epson is a registered trademark of Seiko Epson Corporation. Macintosh is a registered trademark of Apple Computer, Inc.,

Circle 269 on reader service card.



Instant Link: Macintosh Products, Manufacturers, Services 



Instant Link 

The Macworld Catalog

Now *Macworld* connects you with the world of Macintosh products instantly. And cost-effectively.

The Macworld Catalog is your immediate access to hundreds of Macintosh products, manufacturers, and services. Each month, this special direct response section brings you detailed product information arranged by category—so you can quickly compare prices and capabilities. Then pick up the phone and order!

For the best Macintosh buys, scroll through *The Macworld Catalog*.

The Macworld Catalog

Accessories

Furniture	281
Hardware	281
Mouse Pads	281
Supplies	281

Hardware

Bar Code	283
Computer Systems	283
Data Acquisition	284
Emulators	284
Memory Upgrade	284
Miscellaneous	287
Peripherals	287
Printers	287
Scanners	287

Hypercard Stacks

.....	287
-------	-----

Services

Computer Insurance ..	288
Consulting	288
Data Conversion	288
Desktop Publishing	288
Laser Recharge	289
Training	289

Software

Architecture	290
Bar Code	290
Business	290
Clip Art	291
Communications	292
Desktop Publishing	292
Educational	292
Engineering	293
Entertainment	293
Fonts	294
Genealogy	294
Graphics	295
Health	295

Languages 295

Medical 295

Mental Arts 295

Music/MIDI 296

Presentation 296

Office Management 296

Programming Tools 296

Public Domain 296

Real Estate 297

Religion 297

Sales/Marketing 297

Scientific 298

Spread Sheets 298

Statistics 298

Miscellaneous

Business Oppor..... 298

Mailing Lists 298

Film Imaging 298

Categories are subject to change

Advertising Rates & Information *The Macworld Catalog*

The Macworld Catalog section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The *Catalog* offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2" minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at \$399 per issue \$1197 total).

For more information, space closings, and material deadlines, please call toll-free 800/888-8622.

**Instant Link:
Macintosh Products,
Manufacturers,
Services**

**The Macworld
Catalog**
501 Second Street
San Francisco,
CA 94107
800/888-8622

Account Managers
Niki Stranz,
Western U.S.
Carol Felde,
Eastern U.S.

The Biggest Small Investment You Can Make.



Take advantage of the direct link with your buyers that maximizes exposure at a low cost.

The Macworld Catalog reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.

Get into the link. Call 800.888.8622 and place your ad now!

800.888.8622

The Macworld Catalog

Accessories

Furniture

The MacDesk

The Perfect Workstation



Harwell Services
386 Freeman Suite 3
Long Beach, CA 90814

Call Now To Order
(213) 433-3807

Only \$30

Why spend \$100 or more?

- Affordable, sturdy, functional, handsome
- Raises the Mac 4 inches
- Handmade of 100% wood
- Finished in cherry, golden oak, or walnut
- 3 models to choose from
- Holds both external and hard disk drives
- Keyboard and other peripherals fit underneath
- Cost only \$30 plus shipping and handling

CIRCLE 599 ON READER SERVICE CARD

Hardware

Lock Your Disk Drive

Easily locks into SE, 512e, Plus, Lisa & II drives in under 7.5 sec. Prevents system boot, duplication of hard drive files & accidental erasure of data by others in your absence. Uses tubular lock and keys. Send \$19.95 each and model type. Patent Pending. Quantity discounts - keyed alike or not. Also PS/2 & clone disk drive locks.

Z-Lock Mfg. Co., 1201 N. Catalina #949, Redondo Beach, CA 90277, 213/372-4842

Mouse Pads

Custom Printed Mouse Mats™

Price each with one-color imprint

12 mats	7.89	150 mats	3.50
25 mats	7.47	300 mats	3.60
50 mats	7.06	600 mats	3.44
100 mats	5.73	1200 mats	3.34

- Prices include shipping
- Grey or Red Mats - 8" x 9 1/2"
- Individual samples - 12.50 each
- Long-lasting imprints will not rub off
- Custom colors, multi-color printing available
- Delivery - Approx. 1-2 weeks
- Rush service is also available

1-800-782-8628

Peak Products, Inc.

12434 Cedar Road • Cleveland, Ohio 44106 • (216) 229-2578

Company Logo Specialist

Qty. Canvas Hard Surface
• 12 \$8.50w/logo N/A
• 72 \$4.90w/logo \$5.90w/logo
• 144 \$3.70w/logo \$4.70w/logo
• 500 \$3.14w/logo \$4.14w/logo
• 1000 \$3.03w/logo \$4.02w/logo
Canvas Pads: Grey, Red, Gold
Hard-Surface: Grey, White, Blue
Size: 9.5" x 8" x 3/8" Multi-color
OK. SAMPLES with your logo
\$12.50. ENTIRE pad imprintable
Imprints 100% GUARANTEED
Computer Expressions, 3833
Chestnut Street, Philadelphia,
PA 19104, 800/443-8278

Mouse Pads

Custom Printing Available
Cloth: Blue, Gray, Burgundy,
Red, Brown, Green, Black,
Navy & Platinum
Size: 8x7 1/2 8x9 1/2 8 1/2x11
12 Pads 3.25 3.50 3.75
72 3.00 3.25 3.50
144 2.85 3.10 3.35
PLASTIC: Blue, Platinum,
Gray & Red
Size: 8 1/2 x 11
12 Pads-6.50 36-6.00
72-5.75 144-5.25
CALL AND ASK US ABOUT OUR
VIEW PAD AND PICTURE PAD.
Precision Line Inc., 14100 23rd
Ave N., Minneapolis, MN 55441
1-800/328-0077, 612/557-1979

Supplies

MACINTOSH DUST COVERS

Mac, keyboard & mouse.
Reg. \$32 NOW \$25
Mac II, monitor atop CPU,
keyboard & mouse.
Reg. \$42 NOW \$33
*Free 8"x9 1/2" Mousepad
valued at \$10 with cover set purchase.
Satisfaction Guaranteed.

Computer Cover Company
23352 Peralta, #14, Laguna Hills, CA 92653

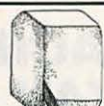
TOLL-FREE: 800/235-5330

VISA In CA: 800/237-5376 MC

CIRCLE 585 ON READER SERVICE CARD

Dust Covers

for a Clean Machine



Protect your equipment from dust, spills, and aggravating downtime with ABCOM DUST COVERS for personal computers.



Attractive, water resistant packcloth in NAVY, SILVER, or BROWN
MC & VISA ACCEPTED. PLEASE WRITE OR CALL FOR COMPLETE PRICE LIST AND BROCHURE
2333A N. SIERRA HWY, BISHOP, CA 93514
619/872-1966

CIRCLE 552 ON READER SERVICE CARD

ComputerWear

100% COTTON CANVAS
MAC, SE, II, & PRINTERS
Beige w/ Grey Trim Breathable! Static-Free!
NEW! Seal-Skins
For Keyboards



1-(800) 826-5761

Int'l: (415) 759-1466 Fax: (415) 564-0506
Contemporary ComputerWear 1320-36th San Francisco 94122

CIRCLE 586 ON READER SERVICE CARD

MacSac

For people going somewhere.

Cordura exterior for durability. Thick, high density foam padding for shock absorption. Padded pockets to protect keyboard and peripherals.



Backpack model shown. Other MacSacs available.

(401) 274-0595

computerAid

235 Promenade Street
Providence, RI 02908

CIRCLE 582 ON READER SERVICE CARD

High Quality/100% Guarantee

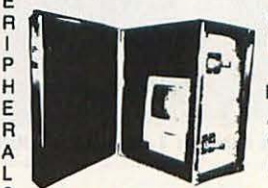
3 1/2" DS/DD \$.95
3.5 HD \$1.98

BULK RATE
Includes label, sleeves, and tabs
Minimum \$4 for shipping and handling
MC/Visa accepted
CA residents add 6 1/2% sales tax

VNB - P.O. Box 42579
San Francisco, CA 94142
Phone 1-415-346-3913
FAX 1-415-346-2853

CIRCLE 680 ON READER SERVICE CARD

CHECK YOUR MAC SHIP YOUR MAC



with TransMac™
ORBIT SYSTEMS

225 Third Street
BOWLING GREEN, KY 42102
502-782-0600

Dealer Inquiries Welcome

CIRCLE 685 ON READER SERVICE CARD

DS/DD 800K 85¢ EA

LOTS OF 50 100% CERTIFIED

SONY BULK: DO (M/N 50) \$1.05 QTY: 100 - 98¢
BULK COLOR: DO (M/N 7) COLORS M/N 251 \$1.10
SONY BOXES OF 10: DO (M/N 3) BOXES \$11.00
SUPER DRIVE DISKS (FOR NEW MACS/SE)
MAXELL, 40 discs HD1.44 MB (LOTS OF 10) \$3.00
MAXELL BOXES OF 10: DO (M/N 3) BOXES \$12.80
80 Disk Holder: LOCK, TABBED DIVIDERS \$8.95
120 Disk Holder: LOCK, TABBED DIVIDERS \$11.95
AMERICAN GROUP
12132 Sherman Way • N. Hollywood, CA • 91605
1-800-288-8025
SAME DAY SHIPPING!

CIRCLE 676 ON READER SERVICE CARD

The Macworld Catalog

THE FINEST MACINTOSH LUGGAGE AVAILABLE



The Finest Luggage available for the Macintosh anywhere at any price. Each bag comes with a comfortable professional shoulder carry strap, not a cheap, painful piece of plastic. Dividers and pockets on the inside with two additional pockets on the outside distinguish the MacBag from many "rag bags" on the market now. Available in assorted colors for SE, SE with extended keyboard, and Imagewriters. Also available with backpack straps.

We also manufacture freight cases for shipping or the frequent flyer. The only way to transport a Mac II or Laserwriter. *The Best in Custom Cases.*

Linebacker 643 Industry Drive, Seattle WA 98188
Call Us at 1-800-228-7042 or 1-206-575-1180

CIRCLE 684 ON READER SERVICE CARD

Reclaims Desk from Disks

The VDS 240

- Vertical Disk Storage
- Holds 240 Disks
- Mounts on Wall
- Free Desk Space



"It's the only way to store disks"
— Jeff Wallick, owner, MacOrchard

To Order: 1-800-942-4008

Vertical Solutions • P.O. Box 7935 • Olympia, WA 98507 • 206-352-3287

CIRCLE 694 ON READER SERVICE CARD

100% Guaranteed
MC, VISA, CDO
24 Hour Shipmark

BULK DISKS

Prices based on 200 Qty.
Includes labels, sleeves, & tabs.

3.5" DS/DD	
■ SONY	1.05
■ MAXELL	1.09
■ VERBATIM	1.07
■ DATASAFE	.89
3.5" DS/HD	
■ 3M	3.59
■ YOK	3.29
■ DATASAFE	2.75
5.25" DS/DD	
■ MAXELL	.59
■ 3M	.57
■ VERBATIM	.54
■ DATASAFE	.35
5.25" DS/HD	
■ TDK	.89
■ DATASAFE	.87

(800) 426-0247

Sales
Main (201) 892-5655
Fax (201) 892-6106

PRINCETON
DISKETTE

432 MacArthur Dr. & Brook, NJ 07070

CIRCLE 633 ON READER SERVICE CARD

"BIG BLUE IS GOING BELLY UP"



Specify S-M-L-XL

Show Your True Colors

High Quality T-Shirt \$15
Bumper Stickers \$ 5

Send Cash or Check to
DMP

810 N. Fairfax St.
Alexandria, VA 22314

CIRCLE 645 ON READER SERVICE CARD

Exponent™ Media Management

*cassettes...store
and organize your
disks, back-up tapes
and all types of media!*

The cabinets and mounting brackets let you build just the right system for quick access to your media in one stackable, lockable system.

cassettes have removable drawers, built-in handles, large-easy to read label panels. You can add units at any time to expand your system.

cassette3.5 180 3.5" Disks; 30 Small Back-Up Tapes; 39 Audio Cassettes (with-out covers); 24 16 mm Microfilm Reels Cartridges; 36 8 MM Camcorder Tapes

cassette5.25 200 5.25" Disks; 80 Laser, Compact or Optical Disks; 16 Large Back-Up Tapes; 20 Bernoulli or Nintendo Cartridges; 864 Photographs; 4000 Microfiches



*cassettes can be stacked
or mounted under a desk!*

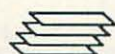


Item	Size & Weight	Retail	Special
CAS3.5	13.5" D x 15" W x 5" H	\$ 69.95	\$ 41.97
CAS5.25	13.5" D x 15" W x 7" H	\$ 59.95	\$ 35.97
BK3.5	Mounts 1 cassette3.5	\$ 24.95	\$ 14.97
BK5.25	Mounts 1 Cassette5.25	\$ 24.95	\$ 14.97

Stellar American Inc.

1040 Industrial Dr. #18 Berlin N.J. 08009 (800) 784-DISK
(609) 768-7950 Fax 768-7209 Call for FREE Mac Catalog

CIRCLE 656 ON READER SERVICE CARD



LASER LABEL
TECHNOLOGIES

Labels • Paper • Envelopes • Transparencies

Free Catalog

800-882-4050

in Illinois call collect 312-243-9826

CIRCLE 598 ON READER SERVICE CARD

The Macworld Catalog



Pack your Mac in seconds!

Cordura case has internal padded pockets for mouse, keyboard and drive. Available in six colors. Extended Keyboard version also available.

For a dealer near you call toll free

1-800-548-0053

West Ridge Designs
1236 N.W. Flanders
Portland, OR 97203

CIRCLE 670 ON READER SERVICE CARD

Hardware Bar Code

BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II

Connects on keyboard or ADB
Requires no additional program or port
Does not affect keyboard or mouse
Industrial quality, heavy-duty units
Also available

SmartCard encoder/reader
Magnetic encoder
Code 39 UPC & Printing Software
Portable Bar Code Reader

TPS Electronics
4047 Transport Street
Palo Alto, CA 94303
415-856-6833

Telex: (Graphnet) 371 9097
FAX: 415-856-3843

CIRCLE 666 ON READER SERVICE CARD

Computer Systems

Build your own Macintosh

- Learn Secrets of Experts
- Break no Laws • Save Money
- Have Fun Anyone can build a new Mac work-alike from readily avail. catalog parts. Build anything from Mac 128 to Mac Ixx equivalent. Save money over new or used sys. Read "Building your Own Macintosh" & learn all secrets. Photos, illustrations, & charts make it simple. \$24.95 postpd. Visa/MC, chk.

Brant Associates, 4420 SE Mark Kelly Ct., P.O. Box 68708, Portland, OR 97268

NATION'S TOP MACINTOSH™ SYSTEM INTEGRATORS

CPUs: II, SE, SE/30, Plus, Ixx, Iicx, Compaq, AST

Monitors: RasterOps, Radius, Apple
Printers: IIint, IIintx, Lino300, QMS, NEC LC890

Film Recorders: Matrix ProColor, LaserGraphics

Hard Drives: CMS, Everex, Rodime, Micronet, PCPC

Scanners: Sharp, Dest, Abaton
SIMMs and Software

(Maintenance contracts & financing available.)

- MC/VISA add 3% - 15% restocking charge
- 30 day trial period/guaranteed 100% satisfaction - 100% satisfaction guaranteed.
- 90 day warranty on Apple

Hi End Specialty Systems (214)620-9332



FAX (214)241-0929
P.O. Box 260576

Plano, TX 75026-0576

Hi End Specialty Systems is not an authorized Apple dealer therefore all 90 day warranties should be sent to HESS for repair. All trademarks belong to their respective owners.

CIRCLE 600 ON READER SERVICE CARD



Mac Plus w/ 1MB RAM, 20MB internal Hard Disk,
(already includes keyboard and mouse)
\$1799

Mac IICX 1MB RAM,
40 MB Hard Disk
\$3925

check out these prices !!!
(818) 773-9201
Call us last for the best quotes

for all Macintosh and Mac-related equipment

P.O. Box 34014
Granada Hills, CA 91394-34014

CIRCLE 678 ON READER SERVICE CARD

800 PC-RENTL



\$189
per mo.

Mac SE

Also Available:

- * IBM PS/2 50Z, 70, 80
- * Compaq Deskpro 386S, 386E, Portable III, SLT/286
- * Mac SE, SE/30, Mac Iicx
- * Apple LaserWriter NT, NTX
- * H-P LaserJet Series II

NEXT DAY

ANYWHERE IN THE USA

800 PC-RENTL

Call Free 800 727-3685

CIRCLE 551 ON READER SERVICE CARD

DATA (213)470-9555
Computers Fax 470-9457
2253 Westwood Blvd. L.A. CA 90064

LaserWtr.SC/NT/NTX In Stock
Mac+ /20Mb 1345./1895.
MacSE2Dr/20Mb* 2275./2595.
MacSE30/45Mb* 2685./2895.
MacII/40Mb* 3565./3995.
MacII60/80Mb* 4145./4535.
CMS Hard Drives CALL
MonitorMono/Color 325./725.
***Keyboard Reg./Ext.** 99./175.



COD & Next Day Delivery Available
No Tax Outside California

CIRCLE 589 ON READER SERVICE CARD

Portable Mac !

Convert your Mac + or SE

The "Odyssey 2000" kit features a removable backlit Kodak display for standard use and overhead projection. Optional adapter for Mac + allows use of SE compatible internal hard drives. Custom carrying case. Easy to Install!



Odyssey Systems
(208) 362-0023

call for free brochure Visa/MC

CIRCLE 629 ON READER SERVICE CARD

The Macworld Catalog

Call 800-541-2318

We Fix Macs

We'll Make Your Mac As Good As New • Specializing In Power Board Repair
Box 680, Wardsfield, VT 05673

Maya
Computer

CIRCLE 675 ON READER SERVICE CARD

DISCOUNT MACINTOSH

Mac Plus.....	\$1295
Mac SE 2drive.....	\$2245
Mac SE 40mb.....	\$2745
Mac SE/30 CPU.....	\$3095
Mac SE/30 40mb.....	\$3495
Mac SE/30 80/4mb.....	\$4395
Mac IICx CPU.....	\$3495
Mac IICx 40mb.....	\$3895
Mac IICx 80/4mb.....	\$4795
Mac IICx 80/4mb.....	\$5495
Apple color monitor.....	\$750
Apple 8 bit video card.....	\$495
Apple keyboard.....	\$100
Apple ext keyboard.....	\$175
Imagewriter II.....	\$450
Imagewriter LQ.....	\$995
Laserwriter NT.....	\$3595

KIWI COMPUTERS

P.O. Box 67381
Los Angeles CA 90067
(213)553-4507

Fax (213)286-9667
Mon-Fri 8:30am-4:30pm

Apple and Macintosh: IBM Apple Computer

CIRCLE 608 ON READER SERVICE CARD

MacLite/Z88 Computer

A portable 2 lb. computer. Can upload/download Excel and W.P., SS, DB, Basic, Diary, Terminal software, 32K expandable to 1.5 Mb. Runs 20 hours on 4 AA batteries. MacLite contains Z88, HC organizer for \$779.95. Call or write for info and the lowest prices. Visa/MC accepted with 3%. Sharp's, Box 326, Mechanicsville, VA 23111, 804/730-9697, FAX 804/746-1978

Data Acquisition

MacPacq

The MacPacq transforms the Macintosh into a digital oscilloscope, chart recorder & waveform generator. A complete data acquisition & control system. 8 channel A/D, 8 digital I/O, programmable gain, 64K RAM. Optically isolated, line or nicad powered. Runs remote and/or connected to Mac. Comprehensive software interface provides for powerful & flexible system. \$1195 complete. Biopac Systems, 5960 Mandarin Dr., #D5, Goleta, CA 93117, 805/967-6615

Emulators

II in a Mac

An Apple IIe computer
...all in software!

Run Apple II software on your Macintosh.
Convert Apple II files to Macintosh files.

\$149.95 Add \$3 for P&H

COMPUTER:applications, Inc.
12813 Lindley Drive Raleigh, NC 27614
(919) 846-1411

CIRCLE 583 ON READER SERVICE CARD

Memory Upgrade

Upgrade w/Accu-Simms

Upgrade your Mac Plus, SE or Mac II with our low profile one MEG SIMM modules. We assemble, test, and have strict quality control, and can give a lifetime warranty. \$150 per meg. (Qty. discounts.) Full instructions come with order. (All SIMMS are 120NS or faster.) Prices may be lower by the time this ad comes out. Call for quote & info 1-800/662-SIMM.

Data Memory Systems Co.,
15 Union St., Lawrence,
MA 01840 Tel: 508/683-2325
Fax: 508/975-5232

SIMM (Memory Modules)

Diamond-Pact™, Top Quality American made memory modules offer easy and economical expansion of Mac Plus, SE, II. DRAM by 1,2,4 or 8 megabytes. MC/VISA/AMEX
See display ad this issue!

AMD
American Micro Distributors, Inc., 16897-D Algonquin, Huntington Beach, CA 92649, 714/840-5560, Fax: 714/846-0570

DON'T LET THIS HAPPEN TO YOU!

COLOR? MULTIFINDER?

MEMORY UPGRADES FOR THE MAC PLUS, SE, II

SINGLE IN-LINE MEMORY MODULES



CDC ENTERPRISE (714) 630-4633
2970-F E. LA PALMA, ANAHEIM, CA 92806

CIRCLE 574 ON READER SERVICE CARD

UPGRADES!

512Ke - Plus \$295
512K - Plus \$625
128K - Plus \$695

We buy and sell new & used equipment also!

Peripheral Outlet

314 S. Bdwy • Ada, OK 74820
(405) 332-6581

Visa & MC okay (add 3%)

CIRCLE 687 ON READER SERVICE CARD

MAC SIMMS

Add memory to your Mac Plus, SE or Mac II. One megabyte SIMM modules available in 2MB sets. We offer the lowest price you'll find anywhere, any quantity. Call for quote. MC/Visa. Immediate delivery. Product satisfaction guaranteed. We've been in the RAM business since 1982.

Palo Alto RAM, P.O. Box 50690, Palo Alto, CA 94303, 415/858-0125

HARD DRIVES LIFETIME WARRANTY

20 MEG INTERNAL	\$349	Call
31 MEG INTERNAL	\$410	on
48 MEG INTERNAL	\$489	
20 MEG EXTERNAL	\$485	Current
31 MEG EXTERNAL	\$489	
41 MEG EXTERNAL	\$547	Low
46 MEG EXTERNAL	\$590	Price
61 MEG EXTERNAL	\$590	
80 MEG EXTERNAL	\$705	
100 MEG UP	Call	

Fits in SE+Mac II with 2 drives
Include PD+Backup Software
External fits under Mac
Seagate-Miniscrite-Quantum
WESTCOM COMPUTER
P.O. Box 154 Ayden, NC 28513
800-422-8591-919-746-4961

CIRCLE 671 ON READER SERVICE CARD

The Macworld Catalog

1MB SIMM

\$Lowest

80ns • Low Profile • High Quality 4-Layer Board
Lifetime Warranty • VISA, MC No Surcharge • Same Day Shipping

SOUTH COAST ELECTRONICS

700 S. Flower St. #2200, Los Angeles, CA 90017
213-489-7924 Fax 213-489-0266

800-289-8801

CIRCLE 654 ON READER SERVICE CARD

Cut through the murk of Mac memory.

1-800-950-CARE

in MN (612) 920-CARE

Confused about memory upgrades? Call and we'll tell you all you need to know. We know what we are talking about and we like talking about it. Memory upgrades from 1 meg to 8 megs for all Mac Systems. Use your fingers, your mind will follow. Enlightenment is but a phone call away.

C Computer
Care,
Inc.

(612) 371-0061

(612) 371-9342 (fax)

(800) 950-2273

Ford Centre, 420 North Fifth St., Suite 1180, Mpls., MN 55401
Dealer inquiries welcome. Visa/MC accepted.

CIRCLE 584 ON READER SERVICE CARD

Used Systems

512K.....\$679.00
512Ke.....\$889.00
MacPlus.....\$1179.00
Mac SE.....\$2050.00

New Systems

MacPlus
Mac SE
SE/30
Mac IIcx
MacIIfx

Hardware & Accessories

Maxcess 20 to 300 MB HD
800K Drive (int. & ext.)
1200 & 2400 bps. Modems
Apple Laser & Dot Matrix
Printers
GCC Ink Jet & Laser
Printers

**(215) 352-6883
Ext. 30**

While you wait service for
local customers. Same day
turn around for non-local
customers.

Ram/Rom Upgrades

128K ---> 512K
128K ---> 512Ke
128K ---> MacPlus
128K ---> 2MB MacPlus
512K ---> MacPlus
512Ke ---> MacPlus

Simmons
Consulting

Macintosh System Enhancements
6417 Market Street
Upper Darby, PA 19082

CIRCLE 646 ON READER SERVICE CARD

How Big Do You Want Your Apple?

4MB
High Profile
16 - 32MB For Mac IIx
Perfect For A/UX
Low Profile
4MB SIMMs
Now Available

1MB
High Profile
Low Profile
2 - 8MB For Mac
Plus, SE, SE 30,
II, IIx and IIcx

256K
Low Profile
1 - 2MB For
Mac Plus,
SE, SE 30, II,
IIx and IIcx

Memory Expansion SIMMs From Newer™ Technology

- Guaranteed Same Day Shipment
- University and Corporate Purchase Orders Accepted
- Ask about our Exclusive Extended Warranty

Available for immediate delivery!

MacSElerator™ Accelerator Board for Macintosh SE
68000 microprocessor doubles the speed and power of your Mac SE. An optional 68881 match co-processor is available for technical applications.

Call Our Memory Hotline For Prices and Discounts
1-800-678-DRAM (678-3726)

Newer TECHNOLOGY

1117 S. Rock Rd., Suite 4
Phone (316) 685-4904
FAX (316) 685-9368
Wichita, KS 67207

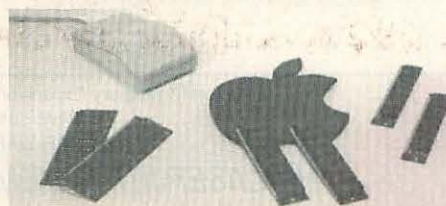
In Canada Contact: Tallgrass Technologies, Canada, Inc.
1775 Meyerside Drive #1 • Mississauga, Ontario L5T 1E2
(416) 673-3244 • FAX (416) 673-3926

CIRCLE 631 ON READER SERVICE CARD

More Muscle for your Mac!...

MEMORY SIMMS

- 1 Meg
- 256K
- 120ns
- 100ns



SOJ

DIP

PO's

TERMS

We carry only quality new parts from the same manufacturers who supply Apple® OEM memory boards



SECOND SOURCE (602) 966-0357

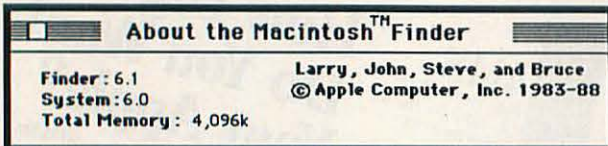
2011 E. 5th Street - Suite 6 • Tempe, AZ 85281
FAX: (602) 966-7581

CIRCLE 641 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



The Macworld Catalog



- JAPANESE MANUFACTURE
- LIFETIME GUARANTEE

- 1Mb SIMMS • 120ns or faster
- Low Profile • In stock!

We ship the same day of your order.



**PINNACLE
SALES
INTERNATIONAL**

2005 Hamilton Avenue • Suite 220
San Jose, CA 95125

(800) 622-1722
(408) 559-8544

VISA/Master Card Accepted
University P.O.'s

Macintosh Plus, SE and II are registered trademarks of Apple Computer, Inc.

CIRCLE 634 ON READER SERVICE CARD

1MB - 2MB - 4MB Memory Expansion Boards
SAVE 50% - 60%
2-YEAR WARRANTY

Starion HP LASERJET II MEMORY

CALL (800) 782-8297 *Starion Corporation*
California (714) 750-2627

CIRCLE 669 ON READER SERVICE CARD

SIMM MODULES

For Mac Plus, II, or SE

Advance your Mac's capabilities with MACsimum memory:

1 meg • 100 ns \$199.00

1 meg • 80 ns \$239.00

Special Offer for readers of MACWORLD:

Mention this ad and we will ship next day air at no extra charge!

American Scientific, Inc. • (702) 362-5353

3025 Sheridan Street • Second Floor Brookman Building • Las Vegas, NV 89102
CALL NOW ... QUANTITY DISCOUNTS AVAILABLE! MasterCard or Visa

CIRCLE 559 ON READER SERVICE CARD

MEMORY UPGRADE

LOWEST PRICE !!!

- 1 Meg SIMMs
- Lifetime Warranty
- 30 Day Money Back Guarantee
- Credit Cards & Personal Checks

FREE Installation Kits

(800) 622-2210

PO FAX#:(512) 794-8520

Same day shipping

TechnologyWORKS

4030 Braker Lane West
Suite 350
Austin, Texas 78759

CIRCLE 690 ON READER SERVICE CARD

The Macworld Catalog

Miscellaneous

We BUY Mac's & Mac Stuff!!
We Buy, Sell, & Horsetrade Popular Computers!!

Mac Parts Call	Everex 20 meg. \$495.
Shreve Systems	Used Mac's-----CALL

2421 Malcolm Street Shreveport, La. 71108
Fax 318-865-2006 visa/m.c. O.K. 318-635-1121

CIRCLE 644 ON READER SERVICE CARD

Scanners

SHARP COLOR SCANNERS

JX-300 & JX-450 for Mac, AT & PS2
Tel: (818) 882-7034 • Fax: (818) 341-3017



ALLIED INTERNATIONAL PURCHASING
Corporate Accounts Welcome

CIRCLE 557 ON READER SERVICE CARD

Peripherals

9-Track Tape Subsystem For the Macintosh™



Exchange data files between your Macintosh and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-track tape.

Unit can also be used for disk backup. Transfer rate is up to 1 megabyte per minute via your SCSI interface. Subsystem includes, tape drive, software, and complete documentation. For more information, call us today!



9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 637 ON READER SERVICE CARD

Printer

Apple Daisywheel Printer

TRUE letter quality on all Mac's & Apple II's. Proport. spacing, boldface, 198 columns. Fast 40cps speed and full 130 character printwheel. NEW \$449, RECONDITIONED \$349 includes easy MAC point & click driver software & cable. New bi-di tractor \$99, sheetfeeder \$49. All heavy duty with 90-day guarantee.

Quality Discount Computers, Inc., 135 Artist View Dr.,
Wellington, NV 89444,
702/465-2473, 415/487-8148

Qume. CrystalPrint™

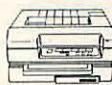
- Postscript-compatible
- 35 typefaces
- 3MB memory
- 5 times faster than Apple LaserWriter IINT

\$3,165

"Best New Output Device"
1989 Eddy Award Winner

619-292-8066

9350 Clairemont Mesa Blvd.
San Diego, CA 92123



U-PUBLISH

CIRCLE 693 ON READER SERVICE CARD

Hypercard Stacks

Learn German French Russian!

MacFlash™ Cards are vocabulary stacks that YOU customize for YOUR study habits. Over 2000 base words & 800 synonyms. Save word sets to disk. Practice noun gender. Russian has accents. 48 page manual. German I & II, French I, & Russian I:

\$25 each. S & H \$3, CA Res add 7% tax.
Call 8 AM-8PM PDT or send check or MO to

The Language Quest Software Co.
101 First Street, Suite 428, Los Altos, CA 94022
COD Orders only: 1-800-283-4080 X850

CIRCLE 683 ON READER SERVICE CARD

HyperTools™2

Add Versatility to HyperCard™ Stacks with these 18 tools

HyperTools™1

Add Versatility to HyperCard™ Stacks with these 18 tools



Trendware Corporation PO Box 2285 Huntington, CT 06484 (203)926-1116

POWER TOOLS FOR HYPERCARD™

Don't take just our word about HyperTools:

"The tools and utilities in these two packages (16 in each program) are powerful, and they can definitely help stack authors take fuller advantage of HyperCard's potential." - MacWorld, Dec 88

HyperTools™ #1: Icon Editor, Scan Cards, Alignment & Array Creation Tools, Script & Font Tools, XCMD tools, Button Tools and more. \$99.95

HyperTools™ #2: Multiple Choice Lists for Fields, Field Sorting, Formatting & Data Validation, Sound Tools, Group Tools, Font Tools and more. \$99.95

Stack Cleaner™: Complete menu creation & editing facility for stacks. Plus utilities to merge, split, clone and reduce the size of stacks. \$49.95

CIRCLE 657 ON READER SERVICE CARD

VOCABULEARN/CE™ HYPERCARD® STACK

- Instant foreign language vocabulary program
- Includes 2 90 minute audio cassettes
- Available in 5 languages
- A superb language learning tool for the computer user.

Penton Overseas, Inc., 2091 Las Palmas Dr., Suite A, Carlsbad, CA 92009-1519



CIRCLE 680 ON READER SERVICE CARD

The Macworld Catalog

Изучайте языки! HyperCard Foreign-Language Software

Spanish and French Pronunciation with sound 49.95 ea. Intro. to Russian with sound 39.95. Verb Tutors 29.95 ea; Vocabulary Tutors, 29.95 ea. in French, German, Spanish, & Russian. Japanese Hiragana & Katakana Tutors, 45.00 for both.

The HyperGlot Software Company
505 Forest Hills Blvd. Knox-
ville, TN 37919 (800)726-5087

CIRCLE 602 ON READER SERVICE CARD

Services Computer Insurance



SAFEWARE

INSURES YOUR
COMPUTERS

Full replacement of hardware, media, purchased software. As low as \$39 yearly. Covers fire, theft, power surges, other accidents. Blanket coverage; no list of equipment needed. Call for information or immediate coverage.

1-800-848-3469
Local (614) 262-0559

SAFEWARE, The Insurance Agency Inc.
2929 N. High Street, P.O. Box 02211
Columbus, OH 43202

CIRCLE 640 ON READER SERVICE CARD

Consulting

Mac Software Contractor
We specialize in Macintosh User Interface, Drivers, Graphics, Networks, large application design & embedded software. Expert in:

- Mac ToolBox
- MPW
- HyperTalk
- C++ and C
- Pascal
- 68000

H++ Software Development,
408/725-0202 or
408/252-4358

Data Conversion

**WE CAN CONVERT DATAFILES
TO/FROM OVER 1,500+ SYSTEMS
IN VIRTUALLY ANY FORMAT!
— ON DISKS OR TAPES!**

Systems like:

- Mainframes
- Minis
- Microcomputers

- Dedicated Word Processors
- Typesetters, etc.

Formats like:

- MacWrite*
- Microsoft Word*/Works*
- WordPerfect*
- Omnis*
- 4th Dimension*
- FileMaker*
- Jazz*
- Excel*
- Tab-delimited ASCII, etc.

*Trademarks of their respective companies

CompuData Translators, Inc.

3325 Wilshire Blvd. Ste. 1202
Los Angeles, CA 90010

800/825-8251 • 213/387-4477

CIRCLE 579 ON READER SERVICE CARD

Desktop Publishing

SLIDES!

ATTENTION USERS OF

- POWERPOINT 2.0
- PERSUASION
- STAND OUT!
- MORE !! • MUCH MORE!

DIGITAL PHOTO

WILL IMAGE ANY
PICT OR 24 BIT TIFF FILES.

24 HOUR MODEM
2 FREE SLIDES
WITH FIRST ORDER

CALL FOR INFORMATION:

402-393-1744

\$7

CIRCLE 592 ON READER SERVICE CARD

MACINTOSH & MS-DOS

**disk
conversion**

dBaseExcelIIWordMultimediaPageMakerPictOfficeWriter
SymphonyWordPerfectWorksWriteNowWordStarAYWriteIII

817-737-7941

NOVA CUBE 1704 Tremont Ft Worth TX 76107

CIRCLE 601 ON READER SERVICE CARD

TAPE/DISK CONVERSIONS



Conversion services to or from
over 2000 computer systems:

- Magtapes • Mini Computers
- Micro Computers • Typesetters
- Word Processors

CALL THE INDUSTRY LEADERS

**PIVAR
COMPUTING SERVICES, Inc.:**

800-HI-PIVAR

165 Arlington Heights Rd #M
Buffalo Grove, IL 60089

New! Varityper 4300PS

Typesetting from your Mac/PC, disk or modem, offers superior imaging and speed using Adobe's newest PostScript RIP, 1200/2400 dpi Negs or paper; Adobe fonts.

- Color PostScript Printer
 - Color Seps/Proofs/Stats
 - Adobe fonts
 - LaserWriter II NTX
 - Microtek 300G Scanner
 - 24-hr. turnaround
 - Fax/Fed-X
 - Low Prices; MC/VISA; Try us!
- MacSunSet™ PostScript Services**
101 N. Main #515, Ann Arbor,
MI 48104

Voice: 313/668-7330

24-br. BBS: 313/482-9880

**Waldman
graphics**

Printers +
Typographers

NYC / NJ / Phila DESIGNERS

We help top-notch designers achieve high resolution type & graphics using desktop tools. Keep your standards while lowering your costs. Original electronic art and PostScript special effects our specialty.

- 1270 & 2540 dpi pages from Linotype L300s
- Repro, Pos. & Neg. film • Disk or modem • Color separations • Scitex system • Award-winning prepress, printing, binding & mailing
- 18 messengers! • Adobe dealer

We are the most knowledgeable people you will talk to. Call Mary Ann Ostberg for more information about our superb services.
212 925-2420 / 201 522-8778 / 215 627-7200 / 609 662-9111

CIRCLE 669 ON READER SERVICE CARD



GRAPHICALLY SPEAKING

LINO OUTPUT

HIGH RESOLUTION LINTRONIC OUTPUT

- Low Rates
- 24-Hour Turnaround
- Disk or Modem
- RC Paper or Film
- Adobe Type Library

Call Collect

408.372.6911
Monterey, California

CIRCLE 597 ON READER SERVICE CARD

• MACINTOSH • SLIDE IMAGING

PROFESSIONAL 35mm SLIDES
DIRECT FROM YOUR DISK
OR VIA MODEM

FROM
\$7.50
NO ADDITIONAL SOFTWARE TO BUY!

- Cricket
- Aldus • MacDraw
- ReadySetShow • Canvas
- Power Point • and Many Others!

24 Hour Service.
Also available - Color Prints
Slide Dups - Overheads.

CALL FOR DETAILS!



Slidemasters
Dallas, Texas
214-437-0542

CIRCLE 648 ON READER SERVICE CARD

1-800-326-LINO

Linotronic 300
Compugraphic 9400
24 hour modem service
Complete Adobe type library
All popular Mac software
Varityper, Laserwriter
Friendly, knowledgeable service

**TOP
COPY**

1429 Market Street
San Francisco, CA 94103

Modem: **415.553.8630**

CIRCLE 664 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Looking for great desktop output?

Now, with RIP III for accurate color seps, 2 Linotronic 300s for your Mac/IBM files. Ask us about special offer: **FREE SCREEN FONTS** Volumes 1-70. Printer fonts 30% off list. **FREE UPS** delivery. High res 2540 dpi • Fast service. Check the low prices on our 24-hour BBS at 201-530-4594. OCR, image scanning and disk conversions. We offer a full range of pre-press services. How can we help you?

Call Toll Free 1-800-877-TYPE

Riverside

CIRCLE 688 ON READER SERVICE CARD

Laser Recharge

ATTENTION: TONER CARTRIDGE OWNERS
Save \$\$\$\$\$\$ Recharge Your Cartridges in America
Why Buy New?

Satisfaction Guaranteed • 24 hour turn-around
UPS your cartridge & dirty cleaning wand
with \$44.00 (includes return shipping) to:

Atlantis Laser Printer Service
4340 S. Hopkins Ave., Ste. 218 • Titusville, FL 32780
1-800-633-4469

No Pooling • Cleaned • Fully Disassembled • No Holes Cut
High Density Toner Used • Tested

CIRCLE 562 ON READER SERVICE CARD

SOUTHERN CARTRIDGE SERVICE, INC.
High Tech Remanufacturers

1-800-442-6288

ABSOLUTE SAME DAY SERVICE
Nationwide Guarantee We Buy Empties
33 Mathews Drive, Hilton Head Island, S.C. 29926

TONER
LASER CARTRIDGES
\$42.
PREPAID UPS RETURN.
P.C.'s \$35

CIRCLE 655 ON READER SERVICE CARD

reconditioned **TONER** cartridges!
for laser printers & Canon PC Copiers
BETTER THAN NEW!
• 20% MORE TONER
• DARKER PRINT
• 100% GUARANTEED
From **\$44.95**
We buy empties
call for brochure
Willow Products Corp.
3857 Willow Ave, Pgh, PA 15234
800-426-8196

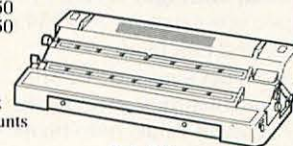

CIRCLE 673 ON READER SERVICE CARD

TONER 2 DAY AIR Prepaid Return

- Remanufacturing Services (your cartridge)
- Laser cartridges in Black \$44.50
- Laser cartridges in Colors \$64.50
- PC cartridges in Black \$39.50
- Microfiche/Fax cartridges \$44.50
- In stock rebuilt laser cartridges \$59.50

Get back your cartridge!
Every cartridge pretested!
Color test prints available!

- We support over 200 diff. printers! • Bulk
- New Cartridges from \$89.50 • Qty. discounts
- We buy empties in large quantities, call.



100% Satisfaction

24 Hours

800-777-8444

LASER
9723 Mill Creek Drive
Eden Prairie MN 55344

• Franchises
• Wholesale

CIRCLE 611 ON READER SERVICE CARD

Laser Saver
1352 Fifth Ave • San Diego • CA • 92101

\$44

Return
Shipping
Included

LONG-LIFE RECHARGED TONER CARTRIDGES

- 30% More Printing • Your Cartridge
- Blacker Blacks • Colors Available
- 24-hr Turnaround • 100% Guaranteed

1-800-234-3383

CIRCLE 612 ON READER SERVICE CARD

P.C. Copier &
Laser Printer Owners



TONER Service Company

UPS to:
2128 Dolman
St. Louis, MO
63104

We buy empties - \$10.00
Ricoh Compt. Toner Kit 80 - \$49.95/cs.
314-776-1155 / **800-88-TONER**
MC/VISA & Corporate Accounts Welcome

CIRCLE 662 ON READER SERVICE CARD

Call Up Your Ad On Our Screen.

The Macworld Catalog.

800.888.8622

Training

4th Dimension® Training Classes

TWO ALL NEW TWO DAY SEMINARS FOR VERSION 2!

- DATABASE DESIGN & PROGRAMMING IN 4th DIMENSION (for beginners)
- ADVANCED CONCEPTS IN 4th DIMENSION (for experienced users)

Generation Four, Inc.

Seminar materials include the highly rated G4 Development Shells
U.S. Locations & Info: (505) 294-3210

3232 San Mateo, NE #199 Albuquerque, NM 87110

CIRCLE 679 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Software Architecture

Proposal Manager 254/255™

Produce eye-catching 254/255's quickly and efficiently. • Includes FileGenerator • PM™: Input data histories once; never rekey again! • Prints onto blank paper • Full documentation & tutorial • Designed by licensed architect • GSA acceptable • Req. PageMaker 3.0 \$279 CA firms add sales tax.

Wordscapes, 4546 B-10 El Camino Real #177, Los Altos, CA 94022, 415/968-8737

Bar Code

PrintBar

BAR CODE FONTS FOR THE MAC

- Code 39, UPC, and EAN.
- PostScript fonts for LaserWriter and Linotronic printers.
- Bit-mapped fonts for screen and ImageWriter.
- Use PrintBar with any software.

(916) 622-4640 / FAX 916 622 4775

Bear Rock
SOFTWARE COMPANY, Inc.

6069 Enterprise Dr., Placerville, CA 95667

CIRCLE 684 ON READER SERVICE CARD

Business

Business Power Tools™

BizPlanBuilder™

A proven business & marketing plan template for raising capital, or launching new products or services. 90+ pages of outlines, headlines, structured texts, lists, linked financial projections... already typed & formatted into 33 MacWrite, MSWord & Excel/Works files. Strong sales & marketing guidance—fill in the blanks & edit into a complete plan. Successful with bankers, investors & corp. executives. Xlnt for all managers. \$99.00

"We applied for a loan in early November and by Christmas we had \$4,200,000."
— D.S., Lakewood, NY

"My CPA highly recommends it."
— J.S., Fort Worth, TX

Grow faster, build profits, save time & \$\$
415/941-9191 • 800/442-7373

"It's excellent—just the thing we need. It's saving us about 90% of the work."
— A. Armstrong

Production ↔ Equalizer™

A large spreadsheet model to structure, modify, evaluate & balance the financial impact of sales forecasts for a variety of manufacturing or service opportunities. 35 yrs. experience, manual. Excel (SYLK) \$149

Companion software packages:

DealMaker™ Business Valuation \$595
Sales Quota Mgmt for mgrs+reps \$149
Pvt. Placement Memorandum \$149
LTD Partnership Agreement \$149
Personnel Policies Handbook \$99
All software includes a friendly manual. 30-day acceptance/return privilege.

JIAN/Tools For Sales™ Visa-MC-Amex
127 Second Street, Los Altos, CA 94022

CIRCLE 663 ON READER SERVICE CARD

LOAN PROCESSING

Amortization Software

AmPack - \$49.95
Balloons, GPMs, ARMS, Biweeklys, Customized Reports, & more.
AmPack Plus - \$89.95
All features in AmPack, plus: Extra Principal, Skipped, APRs, On-screen Loan Comparison & more.

Tracking Software

LoanLease Library - \$69.95
Tracks Loan, Lease, & Rental Payments. Generates Amort. Schedules for unique situations. Detailed rental activity summary statements.

Portfolio Management

Tracks groups at loans. Many report features. Will customize. \$495 Base. Call or write for FREE Sample Reports & Brochures.

Soffclair, Inc.

8753 Parkview • Milwaukee, WI 53226
(414) 797-4490
Add \$5 S/H MC/VISA

CIRCLE 649 ON READER SERVICE CARD

Mail Order Manager

SuperMOM—a complete database solution for catalog mail order businesses. • Easy order entry • unlimited ship-to addresses • Inventory with multiple pricing • A/R • UPS • Credits & returns • Customer tracking by Group, Market, Promo & Salesman • Thorough reporting on sales, inquiries, & advertising response • Demo \$15
National Tele-Press, P.O. Box 79
Mendocino, CA 95460,
707/937-2848

MacEnvelope™

Envelope/Label Printing

Version 4.1

...now I bar code all my mail with the Macintosh and MacEnvelope. Highly recommended.

— John C. Dvorak, San Francisco Examiner

Company Name Street Address City, State, ZIP	Company Name Street Address City, State, ZIP
Company Name Street Address City, State, ZIP	SYNEX
Company Name Street Address City, State, ZIP	Company Name Street Address City, State, ZIP
Company Name Street Address City, State, ZIP	With Messages!
Company Name Street Address City, State, ZIP	City, State, ZIP
Company Name Street Address City, State, ZIP	Company Name Street Address City, State, ZIP

MacEnvelope™ 4.1 prints envelopes or labels with addresses, graphics, messages, fonts, styles, sizes, imports lists, saves addresses, saves layouts and speeds your mail through the postal system with automatic bar coding.

(800) 447-9639 Check/Visa/MC \$89.95 + \$3 s/h (NY add tax)
FAX (718) 768-3997 SYNEX 692 10th St., B'klyn NY 11215



CIRCLE 658 ON READER SERVICE CARD

The most readers. The least cost. Immediate access. Just call *The Macworld Catalog* at 800.888.8622 and place your ad—today!



800.888.8622

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



The Macworld Catalog

PROFITABILITYTM

Because time is money

NOW SHIPPING
VERSION 2.0!

With ProfitAbilityTM you'll have more billable hours in your day and more control over your finances. You'll save both time and money! For the Mac Plus, SE, II, IIX, and IICX (hard disk recommended). Compatible with the ImagewriterTM and LaserwriterTM.

Powerful, yet easy to use, ProfitAbilityTM offers:

- Automatic double entry bookkeeping • Flexible Estimating and Invoicing • Payroll
- Check writing • Payables / Receivables • Client-Vendor Phone List with mail merge
- Financial Statements exportable to spreadsheets • Daily Planner • Profit Centers

\$349.00 + 6.00 shipping and handling. Demo disks available for \$40.00 + 2.50 shipping and handling. CT residents add 7.5% sales tax. Visa and MC accepted.

30 Day Money Back Guarantee

WETZEL & COMPANY, INC. • 147 East Rocks Road • Norwalk, CT 06851 • 1 800 635 7849

© Wetzel & Company, Inc. Macintosh Plus, SE, IIX, IICX, Imagewriter, Laserwriter are trademarks of Apple Computer Inc.

CIRCLE 672 ON READER SERVICE CARD

Excel Templates

- **Business Management 2.1** \$39.95
20 templates for planning & operations.
- **Financial Decisions 2.2** \$49.95
31 calculator templates & loan amort.
- **Invoices, PO's, and Inventory 2.2**
Integrated, macro-driven. \$49.95
- **Personal Affairs 2.1** \$39.95
13 for finances, investments, etc.
- All 4 plus bonus package \$129.95

Money back guarantee.

Terrific values! Send for more info.

HeadStart Software

P.O. Box 51596 • Durham, NC 27717
VISA/MC, call 919/556-8792

CIRCLE 681 ON READER SERVICE CARD

Do-it-Yourself Business Plan

Tim Berry's Business Plan Toolkit for PC or Mac, praised by *Inc.*, *Home Office*, *Bankers Monthly*, *Corporate Cash Flow*: "...well thought-out, clearly written ... includes all the spreadsheets you need, designed to provide all the standard analyses such as multiyear profit and loss, ratio analysis, sales forecasts and the like ... some impressive graphs ... a great buy." With fully-linked financials, sample plan, text files, and manual. \$99.95

Palo Alto Software

(800) 336-5544 (415) 325-3190

CIRCLE 630 ON READER SERVICE CARD

MacTracker

Designed to support managers and professionals in their managing roles and functions.

MacTracker takes care of most everyday activities: reminders, follow-up, meeting scheduling and postponing, resource scheduling, record tracking, multi-projects and multi-resource capability. \$185.

Call Now! Visa.

Magimac, 230 St-Jacques,
Suite 370, Montreal, Canada
H4C3N4 514/939-1515

Clip Art

Clip Art Maps!



- Paint
- Draw
- EPSF

From \$79

World, Continents, USA & states by county!
Object-oriented and bit-mapped available.

Ideal for publications and presentations.
For FREE brochure please call or write:

800-334-4291

MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530

CIRCLE 625 ON READER SERVICE CARD

MILITARY CLIP ART

ArmyArtTM • NavyArtTM • AirArtTM

Orders: 800-441-1228

\$89.95 ea + \$4 s/h

Info: 913-682-3668

Visa • Mastercard



Storm King Technology • 37 Dragoon • Leavenworth KS 66027

CIRCLE 657 ON READER SERVICE CARD

FOR MAC & PC DESKTOP PUBLISHINGTM ARTMASTER

CLIP ART DISKS! OVER 150 TITLES
HIGH QUALITY 300 DPI GRAPHICS!



DISK ART FOR EVERY BUSINESS - WE HAVE EPS/PAINT & B&W TIFF/PS FORMATS
NEW 20 DISK LIBRARY - NEARLY 1,100 ILLUSTRATIONS
\$800 VALUE... OVER 50% OFF!

FREE ART DISK CATALOG

THE ARTMAKER COMPANY
500 N. CLAREMONT BLVD
CLAREMONT, CA. 91711
(714) 621-3282 FAX: 714-621-1323

CIRCLE 677 ON READER SERVICE CARD

Mac II Pioneers Alert!!!

Send US your VHS, your Beta, your 8mm, your huddled Stills, COLOR/B&W, 8/24 Bit, Pict/ TIFF, DIGITIZED FROM ANY IMAGE!!

Custom Graphics for Desktop Publishing, Interior Design, School, Landscaping, PHOTO REALISTIC ART, or just plain Neofashioned Fun!!!
400/800K • PL1 40 Turbo

For complete Details CALL THE SORCEROR'S APPRENTICE
513-221-0748
1716 Madison Rd
Cin., Ohio 45206
VISA MC

TEST VIDEO IMAGE/FREEZE BEFORE BUYING

CIRCLE 653 ON READER SERVICE CARD

CARTOONS



MAXXI[®]
160 Cartoons \$49 + \$3 S&H Ck/MO
MAXXI - 900 Warren N. #200
Seattle, WA 98109 800 842 9327

CIRCLE 621 ON READER SERVICE CARD

PostScript Clip Art

- Holidays
- Birds
- Women
- Food
- Sports
- Wild Animals
- Domestic Animals
- Flowers
- Tools
- Insects
- Nautical
- Fish

Subscribe to monthly clip-art
Complete 12 month subscription to 1152 images \$895.00
Easy Payment Plan Available
Sample One month issue \$95.00
Includes Color Pictorial Index
14 EPS Discs Per Month
Freehand, Illustrator, & IBM Formats Also Available

Totem Graphics

5109-A Capitol Blvd.
Tumwater, WA 98501-4415
(206)352-1851

CIRCLE 691 ON READER SERVICE CARD

Call The Macworld Catalog
and see why.



800.888.8622

The Macworld Catalog

Communications

Burroughs emulation

Contact™ emulates TD/MT/ET and T27 terminals. Sophisticated data capture – all screen data can be used by spreadsheet, database or word processor... CANDE file transfer, fully à la Mac interface, soft keys, multiple pages & addresses, password protection... Soon: advanced file transfer

Avenue Software Inc.
1173 W. Charest Blvd. #390, Québec, Qc
Canada, G1N 2C9 – Tel. (418) 682-3088

CIRCLE 564 ON READER SERVICE CARD

PacerLink (was pLINK)

Connects Macs to VAX (VMS/ULTRIX), DG Stratus & UNIX systems. Supports connections via RS232, direct Ethernet, & LocalTalk bridged to Ethernet. Provides terminal emulation (VT220, VT100), file transfer, virtual disk, & print services. PacerShare extension lets VAX system be an AppleShare compatible file server; PacerTOPS extension lets VAX/VMS system be file server on TOPS network. Pacer Software, Inc.; #402, 7911 Herschel Ave. La Jolla, CA 92037, 619/454-0565

Desktop Publishing

NEW
Capture Screen Images
SnapJot
Only \$36

Copy, Print, or Save any Screen Image

For documentation or notekeeping. Pop-up windows display images instantly for easy organization or use as on-screen notes.

Trillium Software (312) 916-9360
21W171 Coronet Rd., Lombard, IL 60148

CIRCLE 692 ON READER SERVICE CARD

Japanese Desktop Publishing

Kanji PageMaker™



List Price \$995.
Req. 2MB RAM

- * Supports varied multi-column formats
- * Supports Kanji JIS level I and II
- * Compatible with Kanji Talk 2.0
- * Compatible with EGWord 3.0

コラム幅変更機能、トリミング機能、マスターページ、ペーストボードなど高度な編集機能を満載。本格的なDTP環境を強力にサポート。

Dealer inquiries welcome.

Qualitas Trading Co.
6907 Norfolk Rd., Berkeley, CA 94705

Order : 415-848-8080
Info. : 415-848-5815
Fax : 415-848-8009

Developed by Aldus Corporation

CIRCLE 636 ON READER SERVICE CARD

Educational

ScreenShare

ScreenShare is a software product which enables an instructor to do demonstrations in a classroom of networked Macintosh computers. ScreenShare broadcasts the contents of an instructor's Macintosh screen to the screens of the students' Macintoshes while temporarily suspending the students' work. ScreenShare for a classroom \$249 (\$295 Canada).

White Knight Software Corp.,
P.O. Box 564 - 810 West Broadway, Vancouver, B.C. Canada
V5Z 4C9 (604) 290-4855

Kieran

Integrated learning program for children 2-6 yrs. Uses child's name in speech and pictures. Mouse driven, no reading required. Color on Mac II. Covers alphabet training, time telling, counting skills, upper-lower case, addition, matching shapes, and mystery door! 4-mice rating in MacUser. Great Gift! MC/VISA \$39.95
Ohm Software, 163 Richard Dr., Tiverton, RI 02878,
401/253-9354
800/346-9034

TEST GENERATION AND SCORING!

LXR•TEST™ – the **only** complete testing system for the Mac! Rated "best testing tool on the market."

Logic eXtension Resources
9651-C Business Center Drive
Rancho Cucamonga, CA 91730
(714) 980-0046 AppleLink: D0626

CIRCLE 614 ON READER SERVICE CARD

SAVE TIME MAKING TESTS

New! **MakeTest®** is easy to use, convenient & flexible. Prints great tests.

Only \$149.95. 30-day money-back guarantee. Call today for free brochure: **415-752-6515**



MOUNTAIN LAKE®
SOFTWARE, INC.

1041 Lake Street, San Francisco, CA 94118

CIRCLE 627 ON READER SERVICE CARD

Teacher's Rollbook

A complete classroom management tool! Grade averaging and reporting. • New quick grade entry • Full attendance records and totals • Records disciplinary actions • Class size reports • Up to 315 students per file • Remember birthdays & checked out items • Letters to parents • Min. req. Mac 512KE, 2 drives • \$99 • Demo \$10.

Current Class Productions,
22824 Berendo Ave., Torrance, CA 90502, 213/326-4246

An all new edition of the Macintosh Educational Software Collection

- Hard-to-Find & Best Sellers
- HyperCard / Shareware
- Over 150 Titles
- All Subject Areas
- Teachers, Students, Parents

Send for Free Catalog!

CHARIOT • 3659 India St. • San Diego, CA 92103 (619) 298-0202

CIRCLE 575 ON READER SERVICE CARD



The Macworld Catalog

Perfectstudy 3.05

- Study for exams • Guarantees 100% recall accuracy • Study up to 3 times faster than conventional methods allow • Study virtually any subject at any grade level • Automatic on-screen and hard-copy multiple-choice test generator • It really works!

• 512K Mac. \$39 + \$5 S/H

Visa/MC/AX

Powerware Systems, 755 North
100 West, Orem, UT 84057,
800/336-6644

Engineering

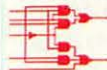
Schematic Entry/Digital Simulation DesignWorks™

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

- fully interactive digital simulation with logic-analyzer style timing display
- fully compatible with Douglas CAD/CAM™ PCB layout
- full 7400, 4000, LSI, analog libraries
- full high level language PLD support when used with LPLC logic compiler
- dot-matrix, laser, pen plotter output
- user-definable device symbols with full simulation

DesignWorks: \$685 LPLC: \$535

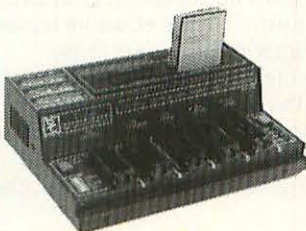
Low-cost educational versions also available



Capilano Computing
545-108th NE, Suite A
Bellevue, WA 98004
(604) 669-6343

CIRCLE 573 ON READER SERVICE CARD

E(E)PROM, MICRO & MEMORY CARD PROGRAMMERS WITH INTEGRATED MAC USER INTERFACE



\$345 - 595

- Connects to modem port. Pull-down commands menus.
- No personality modules for E(E)PROMs & Intel Micros.
- All 24/28/32 pin EPROMs to 1 Mbit (upgradeable to 32 Mb).
- 8741, -2, -4, -8, -16, -32, -64, -128, -256, -512, -1024, -2048, -4096, -8192, -16384, -32768, -65536, -131072, -262144, -524288, -1048576, -2097152, -4194304, -8388608, -16777216, -33554432, -67108864, -134217728, -268435456, -536870912, -1073741824, -2147483648, -4294967296, -8589934592, -17179869184, -34359738368, -68719476736, -137438953472, -274877906944, -549755813888, -1099511627776, -2199023255552, -4398046511104, -8796093022208, -17592186044416, -35184372088832, -70368744177664, -140737488355328, -281474976710656, -562949953421312, -1125899906842624, -2251799813685248, -4503599627370496, -9007199254740992, -18014398509481984, -36028797018963968, -72057594037927936, -144115188075855872, -288230376151711744, -576460752303423488, -1152921504606846976, -2305843009213693952, -4611686018427387904, -9223372036854775808, -18446744073709551616, -36893488147419103232, -73786976294838206464, -147573952589676412800, -295147905179352825600, -590295810358705651200, -1180591620717411302400, -2361183241434822604800, -4722366482869645209600, -9444732965739290419200, -18889465931478580838400, -37778931862957161676800, -75557863725914323353600, -151115727451828646707200, -302231454903657293414400, -604462909807314586828800, -1208925819614629173657600, -2417851639229258347315200, -4835703278458516694630400, -9671406556917033389260800, -19342813113834066778521600, -38685626227668133557043200, -77371252455336267114086400, -154742504910672534228172800, -309485009821345068456345600, -618970019642690136912691200, -1237940039285380273825382400, -2475880078570760547650764800, -4951760157141521095301529600, -9903520314283042190603059200, -19807040628566084381206118400, -39614081257132168762412236800, -79228162514264337524824473600, -158456325028528675049648947200, -316912650057057350099297894400, -633825300114114700198595788800, -1267650600228229400397191577600, -2535301200456458800794383155200, -5070602400912917601588766310400, -10141204801825835203177532620800, -20282409603651670406355065241600, -40564819207303340812710130483200, -81129638414606681625420260966400, -162259276829213363250840521932800, -324518553658426726501681043865600, -649037107316853453003362087731200, -1298074214633706906006724175462400, -2596148429267413812013448350924800, -5192296858534827624026896701849600, -10384593717069655248053793403699200, -20769187434139310496107586807398400, -41538374868278620992215173614796800, -83076749736557241984430347229593600, -166153499473114483968860694459187200, -332306998946228967937721388918374400, -664613997892457935875442777836748800, -1329227995784915871750885555673497600, -2658455991569831743501771111346995200, -5316911983139663487003542222693990400, -10633823966279326974007084445387980800, -21267647932558653948014168890775961600, -42535295865117307896028337781551923200, -85070591730234615792056675563103846400, -170141183460469231584113351126207692800, -340282366920938463168226702252415385600, -680564733841876926336453404504830771200, -1361129467683753852672906809009661542400, -2722258935367507705345813618019323084800, -5444517870735015410691627236038646169600, -108890357414700308213832544720772923379200, -217780714829400616427665089441545846758400, -435561429658801232855330178883091693516800, -871122859317602465710660357766183387033600, -1742245718635204931421320715532366774067200, -3484491437270409862842641431064733548134400, -6968982874540819725685282862129467096268800, -13937965749081639451370565724258934192537600, -27875931498163278902741131448517868385075200, -55751862996326557805482262897035736770150400, -111503725992653115610964525794071473540300800, -223007451985306231221929051588142947080601600, -446014903970612462443858103176285894161203200, -892029807941224924887716206352571788322406400, -1784059615882449849775432412705143576644812800, -3568119231764899699550864825410287153289625600, -7136238463529799399101729650820574306579251200, -14272476927059598798203459301641148613158502400, -2854495385411919759640691860328229722631704800, -5708990770823839519281383720656459445263409600, -11417981541647679038562767441312918890526819200, -22835963083295358077125534882625837781053638400, -45671926166590716154251069765251675562107276800, -91343852333181432308502139530503351124214553600, -182687704666362864617004279061006702248429107200, -365375409332725729234008558122013404496858214400, -730750818665451458468017116244026808993716428800, -1461501637330902916936034232488053617987432857600, -2923003274661805833872068464976107235974865715200, -5846006549323611667744136929952214471949731430400, -11692013098647223335488273859904428943899462860800, -23384026197294446670976547719808857887798925721600, -46768052394588893341953095439617715775597851443200, -93536104789177786683906190879235431551195702886400, -187072209578355573367812381758470863102391405772800, -374144419156711146735624763516941726204782811545600, -748288838313422293471249527033883452409565623091200, -1496577676626844586942499054067766904819131246182400, -2993155353253689173884998108135533809638262492364800, -5986310706507378347769996216271067619276524984729600, -11972621413014756695539992432542135238553049969459200, -23945242826029513391079984865084270477106099938918400, -47890485652059026782159969730168540954212199877836800, -95780971304118053564319939460337081908424399755673600, -191561942608236107128639878920674163816848799511347200, -383123885216472214257279757841348327633697599022694400, -766247770432944428514559515682696655267395198045388800, -1532495540865888857029119031365393310534790396090777600, -3064991081731777714058238062730786621069580792181555200, -6129982163463555428116476125461573242139161584363110400, -12259964326927110856232952250923146484278323168726220800, -24519928653854221712465904501846292968556646337452441600, -49039857307708443424931809003692585937113292674904883200, -98079714615416886849863618007385171874226585349809766400, -196159429230833773699727236014770343748453170699619532800, -39231885846166754739945447202954068749690634139923907200, -78463771692333509479890894405908137499381268279847814400, -156927543384667018959781788811816274998762536559695628800, -313855086769334037919563577623632549997525073119391257600, -627710173538668075839127155247265099995050146238782515200, -1255420347077336151678254310494530199990100292477565030400, -2510840694154672303356508620989060399980200584955130060800, -5021681388309344606713017241978120799960401169910260121600, -10043362776618689213426034483956241599920802339820520243200, -20086725553237378426852068967912483199841604679641040486400, -40173451106474756853704137935824966399683209359282080972800, -80346902212949513707408275871649932799366418718564161945600, -160693804425899027414816551743299865598732837437128323891200, -321387608851798054829633103486599731197465674874256647782400, -642775217703596109659266206973199462394931349748513295564800, -1285550435407192219318532413946398924789862699497026591129600, -2571100870814384438637064827892797849579725398994053182259200, -5142201741628768877274129655785595699159450797988106364518400, -10284403483257537754548259311571191398318901595976212729036800, -20568806966515075509096518623142382796637803191952425458073600, -41137613933030151018193037246284765593275606383904850916147200, -82275227866060302036386074492569531186551212767809701832294400, -164550455732120604072772148985139062373102425535619403664588800, -329100911464241208145544297970278124746204851071238807329177600, -658201822928482416291088595940556249492409702142477614658355200, -1316403645856964832582177191881112498984819404284955229316710400, -2632807291713929665164354383762224997969638808569910458633420800, -5265614583427859330328708767524449995939277617139820917266841600, -10531229166855718660657417535048899991878555234279641834533683200, -21062458333711437321314835070097799983757110468559283669067366400, -42124916667422874642629670140195599967514220937118577338134732800, -84249833334845749285259340280391199350288441874237154676269465600, -168499666669691498570518680560782398700576883748474309352538931200, -336999333339382997141037361121564797401153767496948618705077862400, -673998666678765994282074722243129594802307534993897337410155724800, -1347997333357531988564149444486259189604615069987794674820311449600, -2695994666715063977128298888972518379209230139975589349640622899200, -5391989333430127954256597777945036758418460279951178699281245798400, -10783978666860255908513195555890073516836920559902357398562491596800, -21567957333720511817026391111780147033673841119804714797124983193600, -43135914667441023634052782223560294067347682239609429594249966387200, -86271829334882047268105564447120588134695364479218859188499932774400, -172543658669764094536211128894241168269390728958437718376999865548800, -345087317339528189072422257788482336538781457916875436753999731097600, -690174634679056378144844515576964673077562915833750873507999462195200, -1380349269358112756289689031153929346155125831667501747015998924390400, -2760698538716225512579378062307858692310251663335003494031997848780800, -5521397077432451025158756124615717384620503326670006988063995697561600, -11042794154864902050317512249231434769241006653340013976179991395123200, -22085588309729804100635024498462869538482013306680027952359982790246400, -44171176619459608201270048996925739076964026613360055904719965580492800, -88342353238919216402540097993851478153928053226720111809439931160985600, -176684706477838432805080195987702956307856106453440223618879862321971200, -353369412955676865610160391975405912615712212906880447237759724643942400, -706738825911353731220320783950811825231424425813760894475519449287884800, -1413477651822707462440641567901623650462848851627521788951038898575769600, -2826955303645414924881283135803247300925697703255043577902077797151539200, -5653910607290829849762566271606494601851395406510087155804155594303078400, -11307821214581659699525132543212989203702790813020174311608311188606156800, -22615642429163319399050265086425978407405581626040348623216622377212313600, -45231284858326638798100530172851956814811163252080697246433244754424627200, -90462569716653277596201060345703913629622326504161394492866489508849254400, -180925139433306555192402120691407827259244653008322788985732979017698508800, -361850278866613110384804241382815654518489306016645577971465958035397017600, -723700557733226220769608482765631309036978612033291155942931916070794035200, -1447401115466452441539216965531262618073957224066582311885863832141588070400, -2894802230932904883078433931062525236147914448133164623771727664283176140800, -5789604461865809766156867862125050472295828896266329247543455328566352281600, -11579208923731619532313735724250100944591657792532658495086910657132704563200, -23158417847463239064627471448500201889183315585065316990173821314265409126400, -46316835694926478129254942897000403778366631170130633980347642628530818252800, -92633671389852956258509885794000807556733262340261267960695285257061636505600, -185267342779705912517019771588001615113466524680522535921390570514123273011200, -370534685559411825034039543176003230226933049361045071842781141028246546022400, -741069371118823650068079086352006460453866098722090143685562282056493092044800, -1482138742237647300136158172704012920907732197444180287371124564112986184089600, -296427748447529460027231634540802584181546439488

The Macworld Catalog

STAMP, COIN & BASEBALL CARD COLLECTORS!



Three powerful, yet easy-to-use collectible inventory programs.
• Built-in prices & descriptions.
• Prices updated annually.
Demo \$15, Call for FREE catalog.

COMPU-QUOTE

6914 Berquist Ave. Dept. CM
Canoga Park, CA 91307
800/782-6775 ext. 39
In CA 818/348-3662 ext. 39

CIRCLE 578 ON READER SERVICE CARD



Lotto Pro \$1,000,000.00

BECOME A MILIONAIRE!
IT COULD Happen to YOU!

For those serious about winning
MILLIONS OF DOLLARS

at the LOTTERY

Priceless Information

Lotto Pro™ \$49.95 + S/H

Call: (408) 426-2766

Visa, MasterCard or Send Check to:

MarketMaker

312 CENTENIAL ST. • SANTA CRUZ, CA 95060

CIRCLE 618 ON READER SERVICE CARD



\$79 Go Master + \$6 S/H
ToyoGo, Inc.

1-800-4-TOYOGO

Prepare to meet your NEMESIS™

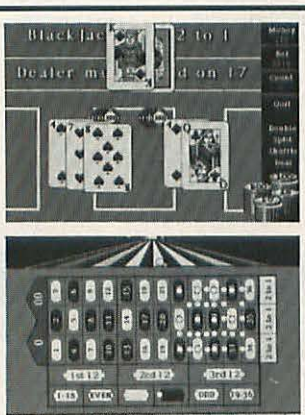
Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game, Go is considered by many to be the secret of Japanese success.

"While chess is a game of war, Go is a game of market share." (Pres. Nikko Hotels)
"The leading Go game for the Macintosh (or ... the IBM PC, for that matter)... Using it is an improvement over learning the game from books or from all but the most patient humans." "This is without question one of the most extraordinary automated aids to go instruction developed."
Charles Selter, MacWorld 6/89

The only Go program to successfully imitate human play.

76 Bedford Street, Suite 34-C, Lexington, MA 02173 (617) 861-0488

CIRCLE 665 ON READER SERVICE CARD



GAMBLIN' TIMES

The best gambling simulation available.

Includes Craps, Roulette, \$25,000 Keno, 4x4, Blackjack, 7 Card Stud, Speed, tic tac stack, Slots and Liars Poker. Lots of XFCN's for fast graphics, voice, sounds and animation. Supports Las Vegas Rules, odds, unlimited betting, rapid repeat bets, card counting, double odds, adjustable speeds and a lot more. All ten games combined into one interactive game which keeps track of all winnings and assets by game. Requires Mac with Hypercard 1.2

Only \$47.95

(That's only \$5 per game)

Send check or MO to Wilson Advertising,
1239 E. Palm Street, Altadena, CA 91001
For phone orders call

(818) 791-3656 MC/VISA

CIRCLE 674 ON READER SERVICE CARD

Fonts

Beverly Hills

"Best Imagewriter™ font available!"

- "Typeset" look, 11 sizes, 6-36 pts.
- Multi-digit fractions; horiz. lines
- Fine spacing, math/musical symbols
- Includes disc, 70-p. printed manual
- Two compatible versions available:
• v 2.0 (ImageWriter I or II): \$29.95
• v LQ-1.0 (IW LQ, Mac +): \$39.95
- Direct orders, add \$3.00 S/H (plus \$1.80 or \$2.40 sales tax in Calif.)
- Site licenses; dealer inquiries invited



ADH Software

P.O. Box 67129

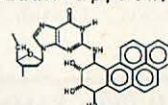
Los Angeles, CA 90067-0129

CIRCLE 554 ON READER SERVICE CARD

DOWNLOADABLE LASERWRITER FONTS

FOR SCIENCE

== ä å ä Æ ∇ α β γ Φ Ψ η ζ τ † ‡



FOR FOREIGN LANGUAGE TEXTS

Μήνιν ἀνείκε θεά, Πηληϊόδεω Ἀχιλῆος
α ε ζ ε ζ ι σ η Α Ε Ζ Σ Ζ Λ Σ Ν

ALLOTYPE TYPOGRAPHICS

1600 PACKARD ROAD SUITE 5

ANN ARBOR, MICHIGAN 48104

(313) 663-1989

Compatible with all Macintosh systems

CIRCLE 558 ON READER SERVICE CARD

Genealogy

Hyper Family-Tree™ the family tree stack

The HyperCard stack that easily records and graphically displays genealogy information including digitized photographs of your relatives, all standard genealogy facts, and up to 6000 words of miscellaneous notes and comments per person. Keeping track of your family was never so much fun! Point and click to navigate through generations of your ancestors. Automatically create, print and export:

- 5-generation pedigree charts
- 20-generation descendant charts
- family group sheets
- family lines
- family history books
- mailing lists and labels
- birthday calendars
- personal history sheets
- indexes

- ✓ Shows day-of-the-week for birth date, death date, and marriage date.
- ✓ Calculates current age, life expectancy, life span and length of marriage.
- ✓ Includes complete user's guide.

\$69 plus \$4 s.h. Visa/MC welcome.
Call or write for a free brochure.

LEISTER PRODUCTIONS

14 Hill Blvd., Mechanicsburg, PA 17055
717-697-1378



CIRCLE 613 ON READER SERVICE CARD

MacGene™ (new 3.1)

** LARGEST INSTALLED BASE **

Easy for Novice/Extra for Experts 100% Mac. Combines Data-Entry, Search & Graphics: Group Sheets, Pedigree, Family Tree, HOT-key, Biography, Lists, Labels, History, no record limits, unique Auto-Link Generation, Publish-ready, FASTEST.

- Custom fields • Custom reports
- Import/Export • no copy protect • \$ bk guar. \$145
- Demo \$25.

Applied Ideas, Inc., P.O. Box
3225, Manhattan Beach, CA
90266, Free info: 213/545-2996



Tired of Arcade Games?
Try the challenge of battle strategy simulation. Nine original, upgrated games. Rommel's DESERT WAR • MIDWAY or SOLOMONS carrier actions • Rome's glory in BARBARIAN or EAGLES IN THE SAND • Civil War action in WESTERN CAMPAIGNS or ARMY OF NORTHERN VIRGINIA • US/Soviet dashes in NORWEGIAN SEA or US invasion in RED STARS. Coming Soon: Patton's Attack on Russia, Hannibal's War With Rome, US War in Vietnam.
\$39.95 each • \$3 S/H (\$5 Overseas). VISA & MC Accepted. 512K+ Required. Specify machine.
WarTime Simulations™ (Div. of SJP Ent) PO Box 246 McHenry IL 60050

CIRCLE 647 ON READER SERVICE CARD



The Macworld Catalog

Family Roots™

Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indices and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed MC/Visa/AE.

Quincept, Box 216, Lexington, MA 02173, 617/641-2930, 800/637-ROOT

Family Heritage File

Most powerful genealogy program on the Mac. Rated "Best" by *Macworld*. Disc. ver. of *Personal Ancestral File™* produced by the LDS Church. New enhancements for non-LDS. • Mac user interface • All Macs & hard disks except 128K • Exports data to WP/data-bases/modems • Pedigree, Family Group, Individuals, Marriages, Surnames, Doc., etc. \$149 + \$5 s/h (Utah res. +6%). Demo \$7

Star•Com Microsystems, Windsor Park East, 25 West 1480 North, Orem, UT 84057, 801/225-1480

Graphics

CADMOVER™ 3.0

REGISTRATION HAS ITS ADVANTAGES
Last chance for CADMOVER™ users to receive a free upgrade, just send in your 1.0 to 2.21 registration form by Sept. 30, 1989. Only original registration forms will be honored.



MOVE UP
TO
CADMOVER™ 3.0



NEW FULL RGB NEW
FORMATS COLOR FEATURES

KANDU SOFTWARE CORP.
703-532-0213

CIRCLE 607 ON READER SERVICE CARD

Mac 35mm Film Recording

Professional quality slides from your Mac files. • Most presentation packages (*Powerpoint, Persuasion, More II, Cricket Presents, MacDraw II, etc.*) • All Pict or pict2 files • All Laserwriter Plus fonts • 2000 - 4000 line resolution. • 1-7 day service • \$3 - \$12/slide • Modem available.

MacImage, 2982 Pascal Dr., Beavercreek, OH 45324, 513/429-9505

MACTRAN PLUS

The versatile Integrated Made-for Mac Development System

• Includes: Editor, Optimizing, Compiler, Source Level Debugger, Linker, Library Manager
• Supports: 68020/68882 in-line code generation. Significant VAX FORTRAN & ANSI 8X extensions. Comprehensive MAC Tool Box Interface. Unlimited code segment size.

DCM DATA Products, 1710 Two Tandy Center, Fort Worth, TX 76102, 817/870-2202

Health

Analyze Diets, Menus...

so much more with the FOOD PROCESSOR III! This TOP-rated software has the best database of any system on the market today! Used by USDA, schools, colleges, hospitals, fitness centers & health programs. • 2400-3000 foods - 30 nutrients. \$295

• CALL OR WRITE TODAY FOR FREE DEMO DISK!

ESHA Research, P.O. Box 13028, Dept. D, Salem, OR 97309, 503/585-6242

Languages

Fortran on Your Desktop

No need to wait for time on the "big" computer any longer. Language Systems Fortran lets you run the same high performance Fortran programs at your desk. VAX-compatible extensions, high precision IEEE floating point data types, complete access to Toolbox, direct code generation for the Mac II, and the MPW programming environment make this compiler the most powerful Fortran for the Mac.

Language Systems Corp., 441 Carlisle Drive, Herndon, VA 22070, 703/478-0181

Medical

MacAnatomy™

...an electronic atlas of Anatomy in 4 volumes on disk in MacPaint™ format. Easily altered and copied to any program via the clipboard. Ideal for students of Anatomy in all the health and legal professions.

MacSurgery™

...is a Hypercard™ stack with multiple-choice questions and answers, available at the click of the mouse. Detailed discussions and documentations are provided. Ideal for continuing education and board preparation. Volumes 1 & 2 available now.

MacMedic Publications

7530 Harwin,
Houston, Texas 77036.
(713) 977-2655

CIRCLE 616 ON READER SERVICE CARD

CMA Micro Computer
55689 Yucca Trail, Suite 5
Yucca Valley, CA 92284

MultiPhase CMA™
MultiWave CMA™

Solo and multipractioner office management systems for the Macintosh 512KE, Plus, SE and II. Compare these features:

Paper Claims	Appointments	Multi User
Electronic	with Recall	Multi Tasking
Claim Files	Management	Networks:
SuperBill	Reports	AppleShare,
Patient	Production	Corvus, TOPS,
Ledgers	Analysis	MacServe
Financial	Responsible Party	File Interchange
Historics	Billing	with other Data
Diagnostic	Audit & Backup	programs
Data Base	Patient Labels	

Please Call
(619) 365-9718

1977
11th
Year
1988

CIRCLE 577 ON READER SERVICE CARD

Medical Office Mgmt.

TessSystem™ software for insurance and billing. Our \$1295 package out-performs software selling at three times that price. Expandable line to grow with your needs. Call for product literature and DEMO software today! New modules include electronic claims and multi-user for Mac networks. *Wabash Medical Resources, Inc. 6865 Parkdale Pl., Suite A, Indianapolis, IN 46254 317-299-7800*

Mental Arts

Turn Stress Into Strategy

Get *Synchronicity*, an entertaining strategy tool/game, for a fresh approach to any situation. Take a mood-altering break that mirrors your own intuitive insight, improves your timing, and prevents critical errors of judgement. It's easy and fun with beautiful art and sound effects. Only \$49 Visa/MC, chk, COD. Money-back guarantee. Enjoy. *Visionary Software Inc., P.O. Box 69191, Portland, OR 97201 1-800-877-1832 (orders) or 503/246-6200*



The Macworld Catalog

Music/Midi

version 2.1 includes text

PRACTICA MUSICA

Ear Training & Music Theory for Everyone

"Best New Education Program, 1987" - MacUser Magazine

- Teaches intervals, chords, melody, rhythm
- Interactive staff notation • Saves scores
- High quality sound • MIDI compatible
- Historical & computer-generated melodies
- Custom ear training melodies

\$125 • Call Toll Free 800-445-4866, In CA: 800-445-8749

ARS NOVA
BOX 40629, SANTA BARBARA, CA 93140

CIRCLE 560 ON READER SERVICE CARD

Office Management

MacPhonebook

Prints Labels
Pocket Book
Inhouse Directory
Daytime™ Format
Little Black Book

Keeps 1600 names, prints different formats. Black covers included. No special paper req'd.

\$59.95 + \$3.00 s/h (NY add tax)
SYNEX 692 10th St B'klyn NY 11215-4502
(800) 447-9639 Check, VISA, MC

SYNEX

CIRCLE 659 ON READER SERVICE CARD

Presentation

CaptGen

Produce a self-running presentation or caption a video without a dedicated CG machine. Using time controlled sequences, CaptGen: • Displays PICT2 files • Can superimpose text over graphics *Special effects include:* • Scrolling text over graphics • Fading text • Dissolving text and much more! \$179.95 + 3.50 S/H

MikroLogix Software Inc., 2629 N. Plumer, Tucson, AZ 85719
To order call: 602/325-8794

Programming Tools

POWER DEVELOPMENT TOOLS

- **Programmer's EXTENDER**
Vol 1: Macintosh User interface
Vol 2: lists, printing, graphics, tiling, popups
- **EXTENDER GRAFFAK**
high quality color graphs - bar, line, log; customizable symbols, grid patterns

Invention Software
313-996-8108

CIRCLE 605 ON READER SERVICE CARD

Color Window Workshop

From opening a single color window to opening, closing, moving & growing 10 windows, WINDOW WORKSHOP avoids the pitfalls of using color windows in Pascal application programs. This 800K disk full of well-doc., expandable application programs, MPW tools & MPW shell scripts manage Window Manager quickly & painlessly. Incl. object-oriented custom ROM interface which cuts compilation time. \$49.95. Check or MO.

Amplified Intelligence, 2810 Redding Ave. Suite E, Sacramento, CA 95820, 916/737-1550

MobyWords™

Unabridged English language databases on 3.5" diskettes for the fully-powered developer. 30,000 screens of ASCII data. Compatible with System 7.0.

Original MobyWords™ \$79
530,000+ unique words and phrases
The largest word-only database that exists

New! MobyHyphenator™ \$129
150,000+ fully syllabified words
Never give the user a bad break again

New! MobyPart-of-Speech™ \$149
150,000+ words with part-of-speech
For razor-sharp English language parsing

New! MobyPronunciator™ \$199
150,000+ words with IPA marks
For perfect text-to-speech, E-voicemail

All products royalty-free.
Send check or MO (add \$3 s/h—CA add 6.5%) to:
ILLUMINUM UNABRIDGED
571 Belden St., Ste. A
Montreal, CA 93940-1307
CODOR INFO ☎ 1-408-373-1491

CIRCLE 682 ON READER SERVICE CARD

Version 2.01

μASM™

COP400 family
1802 family
6502/6502C/6502C2
6801/6801C/6801C2
6804/6804C
6805/6805C/6805C2
6809/6809C
6811/6811C/6811C2
8048 family
8051 family
8085/8085C/8085C2
8096/8096C/8096C2
Z8 family
Z80/64180 family

US \$129.95 each plus s/h*

Fast, Easy to use - full Macintosh interface. S or Hex file output/downloads to most EPROM programmers. Features macros, conditional assembly, local and automatic labels, symbol table cross-ref, module sectioning. Editor incl. MCN/AE.

Micro Dialects, Inc.
Dept W, PO Box 30014
Cincinnati, OH 45230
(513) 271-9100
AppleLink: MDE

CIRCLE 624 ON READER SERVICE CARD

Public Domain

FREE SOFTWARE CATALOG

Over 1000 Macintosh quality software.
For fast service
Write to:

SOFTSHOPPE, INC.
P.O. Box 3578
Ann Arbor, MI 48105-3678
(313) 761-7638

CIRCLE 651 ON READER SERVICE CARD

Software For Success

At Only \$5 Per Disk

- ☐ **86 Servant** — The famous Finder alternative/enhancement. On-line tips in menus & icon bars.
- ☐ **104,105 Borders** — For stationery, business cards, awards, documents, (2 disks, \$10)
- ☐ **198 Statistical Analysis** — plotter, planimetry with MacMeter and map of US area codes.
- ☐ **200, 202 Nudes** — Adults only pictures. Plus an arcade game and nude pinball game. (2 disk set, \$10)
- ☐ **203 Best of Graphics** — Clipboard art, pictures for MacPaint and MacDraw, Startup-Screens, more.
- ☐ **215 MacRoots** — Database of your family roots, printed or displayed.
- ☐ **220 Laser fonts** — Create professional documents with Sanserif, GreyHelvetica, more.
- ☐ **221 MacBill** — Pay bills, write checks automatically.
- ☐ **273 Quick Label** — The desk Accessory that prints mailing labels quickly.
- ☐ **274 Anti-Virus Vaccines** — Prevention for unknown viruses & antidotes to other known viruses.
- ☐ **276 Action Pocketbook** — Professional-looking wallet-sized address books.
- ☐ **278 3 small business programs** — Bus. Log, Ledger D'Main cash accounting & Mac Loan. *
- ☐ **280 Reminder** — For appointments and special occasions.
- ☐ **292 Daily Calendar** — Excel templates to make "to do" lists.
- ☐ **300 Palencia** — Four fonts featuring Palencia, the best ImageWriter font.

PDE's Sets For Success

- ☐ **Business Tools Set** — Track checks, monitor expenses, accounts, and loan payments. Also Bi-Plane spreadsheet, A/R invoicing, Macbillpayer, and Business Log. * (3 disks, \$15)
- ☐ **Personal Productivity Set** — Quick Label desk accessory; print mailing and cassette labels. Design calendars. Plus notepads, shopping lists. MacRoots genealogy; Album Tracker; Atlas. (3 disk set, \$15)
- ☐ **Desktop Publishing Set** — Add style to your documents with over 100 files of excellent Clipboard art, fonts, borders & graphic utilities for the budding desktop publisher. (4 800K disks, \$20)

* Contains shareware donation requests.

P.D.E.
2074C Walsh Ave. #122
Santa Clara, CA 95050
Add \$4 (plus \$14 foreign) S/H
We accept check/MO, VISA, or M/C
We Ship in 24 Hours!
In CA call 408-496-0624
Toll FREE 800-331-8125

CIRCLE 635 ON READER SERVICE CARD



The Macworld Catalog

Real Estate

Religion

Real Estate Software

The Ten Minute

Property Manager \$195

Accounting system for multiple properties. Ideal for investors who manage their own properties.

ProAnalysis \$295

A sophisticated investment analysis program designed for the investor who demands professional quality analysis.

Demos Now Available!

Metropolis
Software

499 Hamilton Ave.
Suite 202
Palo Alto, CA 94301
(415) 322-2001

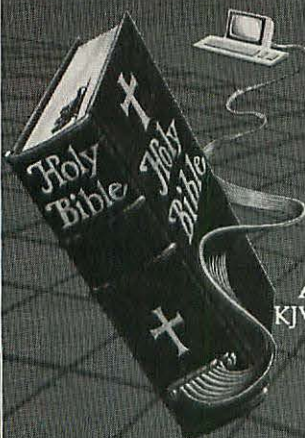
CIRCLE 623 ON READER SERVICE CARD

Property Management

Comprehensive software for managing residential, commercial, condos, and more. Two versions: Basic PM for owner/manager—\$495, Deluxe PM with complete general ledger for professional management—\$1,195. Includes check writing, recurring expenses, financial statements, complete management reporting.

Yardi Systems, Inc., 813
Reddick St., Santa Barbara,
CA 93103, 805/966-3666

Bible study tools that grow with you.



THE WORD processor
The most comprehensive Family
of Products for Bible Study.

Start with **VERSE SEARCH**
including the Bible translation of
your choice with Instant Access
to any verse. Search for any
words or phrases. Separate
windows for comparing verses.
And much more! Only \$99.95

AS YOU GROW, add NIV, RSV,
KJV or NKJV text, Greek or Hebrew
transliterations or topical cross
references, personal commentary,
a chronological Bible and chain
references. Our memory resident
VERSE TYPIST transfers
verses to your word processor.

Bible Research Systems
1-800-423-1228

2013 Wells Branch Parkway #304 • Austin, Texas 78728
Tech Support (512)251-7541 Postage extra. For IBM, MSDOS, Macintosh.

CIRCLE 568 ON READER SERVICE CARD



GodSpeed

**FASTEST BIBLE SEARCH
PROGRAM AVAILABLE...3 SEC.**

Search by Words, Phrase, or
Word/Phrase Combinations

OVER 100,000 COPIES SOLD*

- IT'S POWERFUL
- IT'S EASY TO USE
- IT'S ONLY \$149.95

WHOLE BIBLE (King James)
(Demo) 4 Gospels: \$10

FREE SHIPPING

Call: (408) 426-2766 Visa, MasterCard
or Send Check to:

MarketMaker

312 CENTENAL ST. • SANTA CRUZ, CA 95060

* 100,000+ IBM versions distributed.

NOW AVAILABLE ON MACINTOSH

CIRCLE 619 ON READER SERVICE CARD

Sales/Marketing

New from RealData —

Real Estate Investment Analysis, Version 6.0

Real Estate Investment Analysis has been our best-selling product since it was introduced in 1982. Many software products have come and gone over the years, but RealData and our *Investment Analysis* have stood the test of time. Now Version 6.0 adds new power to this popular program.

What can it do? *Real Estate Investment* allows you to make ten-year projections of the income, expenses, cash flows, re-sale and tax implications of your property. It performs virtually all of the complex Tax Reform, financing and rate-of-return calculations for you in just seconds. It also includes a lease analysis and annual operating statement

Real Estate Investment Analysis, Version 6.0 runs with Microsoft Excel™ or Works™ on the Mac 512 or greater — just \$250.

To order, call or write today. MC, VISA, AMEX Welcome
or send \$2 for our catalog of real estate software for the Mac and PC.

REALDATA®

78 North Main St.
South Norwalk, CT 06854
(203) 255-2732

CIRCLE 638 ON READER SERVICE CARD

ConCensus™

Contributions and Census management software from the nation's largest publisher of church bulletins. Made for the Mac, it tracks and reports membership, statements, donations, fees, labels and more. Multi-user version available. For literature or demo pack, call today:

Liturgical Publications Inc.,
1025 S. Moorland Rd., Ste. 300,
Brookfield, WI 53005,
800/558-7918, 414/785-1188

MARKET MASTER R/A

"The best sales follow-up program you
can buy ..." *MacGuide*

SELL LIKE NEVER BEFORE! It doesn't
just track leads, it handles them for you.
Produces Call Lists, Reports, and Instant
Analysis of results. Sends ALL letters due
with ONE menu click. Letters look
personally typed with envelopes, labels.

Breakthrough Productions
10659 Caminito Cascara
San Diego CA 92108
(619) 281-6174

CIRCLE 570 ON READER SERVICE CARD



The Macworld Catalog

Scientific

FAST, online access to scientific and technical information.

That's what you get when you use STN Express® software to search the 80 databases on STN International®.

Ask for your FREE preview package for Macintosh® by calling:

STN International
% Chemical Abstracts Service

1-800-848-6538 extension 3731



CIRCLE 576 ON READER SERVICE CARD

Geological Software

Great graphics, low prices!

- Lithologic log plotting
- Gridding • Contouring • Piper/Stiff plots • Oil & Gas economics • Stereonet plots • Plate tectonics • Geophysical modelling, +much more for the Macintosh & PC \$50-\$1500. Call or write for FREE catalog of easy-to-use software products.

RockWare Inc., 4251 Kipling, Suite 595, Wheat Ridge, CO 80033, 303/423-6171, Telex: 9102504964

Spread Sheets

Spreadsheet Compiler

At last, you can convert your templates into royalty-free stand alone applications. This means big savings and more sales because your users no longer need a spreadsheet to run your templates. SYLK compatible with Microsoft Excel and other

spreadsheets. Just think, now you can protect your investment while quickly and easily creating professional quality applications. For only \$495, I invite you to try at no risk with our 30 Day Money Back Guarantee.

To order or for more information call (714) 842-2492
Night Diamonds • (714) 842-2492

CIRCLE 571 ON READER SERVICE CARD

Statistics

CLR ANOVA

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal *n*. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Can read text files w/entries separated by spaces, commas, or tabs. \$100 + \$3 s/h. Clear Lake Research, 2476 Bolsover #343 Houston, Tx 77005, 713/523-7842

Miscellaneous

Business Opportunities

Millions of laser printers need toner cartridges!

If you have a small workbench or table, you can start your own toner cartridge recharging business — full or part-time!

Cash in on the exploding demand for recharged toner cartridges for laser printers and copiers. As a LaserCharge-trained entrepreneur, you will be able to offer companies in your area a *long-life* recharged toner cartridge—backed by a nationwide LaserCharge guarantee—for far less money than a new cartridge.

LaserCharge provides training, tools, supplies, trade secrets, marketing strategies and technical support. Choice of two plans: \$4,900 or \$6,900.



LaserCharge

12115 Roxie Drive, Austin, Texas 78729

Call today! 800-223-8134 512-335-8191

CIRCLE 610 ON READER SERVICE CARD

Mailing Lists

MAILING LIST of Mac Users

On labels, tapes, diskettes... or by modem.



Choose from hundreds of thousands of users!
Only 5¢ per name, with no charge for selecting, sorting, media, or delivery.

Semaphore Corporation, 207 Granada Dr., Aptos, CA 95003
(408) 688-9200 (voice) 662-2717 (modem)

CIRCLE 642 ON READER SERVICE CARD

Film Imaging

SCG, Inc.

High Quality 35mm Slide Imaging as low as \$6.95 per image

Also, overheads and 4x5 for print, 8000 line resolution

24 hour delivery available anywhere in the country

phone 305-563-7667
(in Florida) 1-800-829-6800
Fax 305-561-5568
Modem 305-566-5745

SCG, Inc.
523 NE 26 St., Ft. Lauderdale, FL 33305

CIRCLE 695 ON READER SERVICE CARD



MAC DISCOUNT WAREHOUSE™



TOPS™

TOPS for Mac	\$144.75
TOPS for DOS	113.75
TOPS—Netprint	113.75
TOPS—Repeater	124.63
TOPS—Flashcard	158.75
TOPS—Flashbox	124.50



NEC

NEC Multisync Plus	\$931.03
NEC MACsync	542.05
NEC Multisync XL	2073.86

WHY PAY RETAIL?

MDW™ Sells For Less

AND SERVICES YOU BETTER



EPSON®

LX810	CALL	LQ510	ALL
EX800	MDW™	LQ850	EPSON
FX850	FOR BEST	LQ950	MODELS
FX1050	PRICE EVER	LQ1050	READY
		LQ2550	TO SHIP

Microsoft®

MICROSOFT Excel 2.2	\$265.29
MICROSOFT Word	265.29
MICROSOFT Works	199.23
MICROSOFT File	131.17
MICROSOFT Multiplan	131.17
MICROSOFT Write	84.70



HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

HARD DRIVES & STORAGE DEVICES

EXTERNAL—MAC PLUS, SE II	
SD 20 MB	\$491.61
SD 30 MB	516.09
SD 60 MB	734.48
SD 80 MB	856.32
SD 100 MB	1067.82
SD 140 MB	1194.25

INTERNAL—MAC II	
30 Meg	\$399.95
45 Meg	487.21
100 Meg	975.58

INTERNAL—SE ONLY	
30 Meg	\$399.95
45 Meg	487.21

Inner CRATE	
20 Meg	\$464.70 / \$602.35
60 Meg	624.770 / \$909.59

IMPACT SERIES EXTERNAL	
20 Meg	\$497.64
20 Meg Zero Footprint	422.35
40 Meg	599.29 / \$819.62
80 Meg	1056.16 / SAVE

DELUXE SERIES available—Call for your best price	
INTERNAL	
20 Meg	\$419.20 / \$621.54
60 Meg	799.12 / \$969.42
150 Meg (Mac II only)	1169.72

Seagate	
20 Meg / 30 Meg	\$284.70 / \$322.35
48 Meg	349.76 / \$708.42
83 Meg	723.53

The Hayes Smartmodems set the industry standard in features and performance. You don't have to settle for less when you can afford the real thing at MDW's prices.



Hayes Smartmodem 2400 Int.	\$407.41
Hayes Smartmodem 1200	\$284.10
Hayes Smartmodem 2400	\$430.68

MODEMS & CONNECTIVITY

HAYES SMARTMODEM 2400 Int.	\$407.41
HAYES SMARTMODEM 1200	284.10
HAYES SMARTMODEM 2400	430.68
Hayes Interbridge	593.10
EVEREX 2400 External for Mac	193.75
DATEDESK 924 Fax Modem	581.17
DCA MOIRMA	759.70
US ROBOTICS Courier 1200	176.25
US ROBOTICS Courier 2400	287.06
US ROBOTICS 14,400 HST	610.58
US ROBOTICS Dual HST	972.78
TOPS for Mac	144.75
TOPS for DOS	113.75
TOPS—Netprint	113.75
TOPS—Repeater	124.63
TOPS—Flashcard	158.75
TOPS—Flashbox	124.50
IN BOX Starter	148.80
PERSONAL CONNECTION—MAC	42.25
PERSONAL CONNECTION—PC	117.55
SHIVA Net Modem 2400	410.34
SHIVA Net Serial x232	273.57
SHIVA Net Bridge	341.37
SHIVA Telebridge	342.25

TAPE BACKUPS

IRWIN 5040 40 MB	\$944.40
IRWIN 5080 MB	1147.77
EVEREX 60 MB Ext.	752.87
EVEREX 150 MB Ext.	1226.44

MAC SOFTWARE

ALDUS Pagemaker	\$398.83
ALDUS Persuasion	318.96
ALDUS Freehand 2.0	320.56
ADOBE Illustrator	284.70
ADOBE All Fonts	CALL
ADOBE Streamline	224.72
ASHTON TATE Full Paint	64.41
ASHTON TATE Full Write Pro 1.1	260.25
ASHTON TATE DBASE MAC	309.95
BLYTE Omnisc 3+ Express	399.95
BORLAND Sidekick	68.23
BORLAND Reflex Plus	194.11
BORLAND Pascal	69.42
CE Software Calendarmaker	29.37
CE Software Quickkeys	63.22
CE Software Quickmail	252.98
CENTRAL POINT Copy II MAC	24.70
CLARIS MACDRAW 2	269.04
CLARIS MACPROJECT 2.0	334.11
CRICKET SFT. Cricket Draw	177.64

MAC SOFTWARE

CRICKET Graph 1.3	\$117.18
DENEBA Spelling Coach Pro	116.88
DENEBA Canvas	170.58
FIFTH GENERATION Fastback	108.23
FIFTH GENERATION Pyro	74.45
FIFTH GENERATION Suitecase II 2.2	47.93
FOX Base Plus	199.95
IDD MacDraft 1.2B	142.90
INFORMIX Wang	252.45
INSIGNIA SOLUTIONS Soft PC 1.3	248.59
INTUIT Quickwin 3.0	32.35
LETRASET All Fonts	CALL
LXPENTISE MacProof	109.45
MAINSTAY SFT. MacFlow 3.0	124.64
MAINSTAY SFT. MacSchedule	99.20
MICRO PLANNING Micro Planner 6.X	328.16
MICROSOFT Excel 2.2	265.29
MICROSOFT Powerpoint 2.0	265.33
MICROSOFT Word	265.29
MICROSOFT Works	198.23

MAC SOFTWARE

MICROSOFT File	\$131.17
MICROSOFT Multiplan	131.17
MICROSOFT Write	84.70
NASHOBA File Maker	202.35
OMNI Page OCR	543.53
POWER-UP Fast Forms	89.94
SILICON BEACH Digital Darkroom	182.87
SILICON BEACH 3D Enhanced	305.90
SILICON BEACH Superpaint 2.0	123.53
SUPERMAC Pixel Paint	224.87
SUPERMAC Diskit	57.65
SUPERMAC Superspool 5.0	56.90
SUPERMAC Superlaser Spool	85.36
SYMANTEC More II 2.01	247.41
SYMANTEC Sult	67.54
SYMANTEC Write Now 2.0	111.61
TRAVELING Software Laplink	79.95
WHITE PINE Mac 241 Emulator	182.67
WORD PERFECT MAC	199.99

PRINTERS

EPSON	
LX810	CALL
EX800	MDW™
FX850	FOR BEST
FX1050	PRICE EVER
	TO SHIP

brother	
M-1724L	\$579.64
M-1709	\$384.47
HR20	340.60
HR40	629.12

NEC	
P2200	\$344.65
P5300	\$685.63
P5200	519.12
P960XL	1039.24

OKIDATA	
ML 182 Turbo IN STOCK	ML 321
ML 172	\$199.95
ML 128IBM	232.50
LASERLINE 6...	1292.69
ML 320	339.63

Panasonic	
1124	\$351.76
1595	453.45
1180	193.95
1191	244.12

laser printers	
BROTHER HL 8e	\$1869.90
H-P Laser Jet Model 2 / IID	1699.95 / 2835.95
H-P Deskjet	599.00
NEC LB89C	395.60
PACIFIC DATA 25 in 1 cartridge	296.86

PLOTTERS, DIGITIZERS & SCANNERS

CALCOMP	
23120	\$398.82
23180	732.94
SUMMAGRAPHICS	
BitPad Plus	\$309.99
KURTA	
12x12 ISI	\$378.83
12x17	614.12
GTCC	
12x12 Mac+	\$370.55
LOGITECH	
Logi Scan Man	\$324.65

HEWLETT PACKARD	
HP7440A	\$968.30
HP7475A	1369.89
HP7550	2926.56
HP7570	LOWEST PRICE
HP7576-EXL	4546.40
HOUSTON INSTRUMENTS	
HI DMP-52 / DMP-52MP	
HI DMP-56A	
HI DMP-61	
HI DMP-69	
Image Maker	

BATTERY BACKUP & SURGE

AME-1200VX	\$929.45
AME-330XT	279.72
AME-450AT	395.82
AME-520EX	449.48
AME-800RT	699.19

DataShield	
500 Watt	\$555.05
800 Watt	628.56
S100	59.55
S700	787.90
1200 Watt	962.75
6 Outlet Surge	27.85

Durand Technologies, Inc.	
BPS-300	\$330.10
BPS-500	465.11
BPS-550	499.85
BPS-1200	710.65

BC-450	
BC-1200	\$349.50
BC-2000	649.55
4 outlet	1179.80
LC-1200	44.25
LC-1600	158.85
LC-1600	196.80

MEMORY, MODULES

256K X 8 Simm	NEW
1MB X 8 Simm	LOWER
256K 150 Dram	PRICE

MAC II	
MAC SNAP Model +2	\$312.49
MAC SNAP Model 2S	368.96
MARATHON 030 Accelerator	984.92
MAC SE	
MAC SNAP 2SE	454.55
MARATHON 020 MSE1	545.55
MAC SNAP Model 524	199.25
MAC SNAP Model 524E	186.80
MAC SNAP Model 524S	249.10
MAC SNAP Model 548S	708.15
MAC SNAP SCSI Adaptor	112.97

ACCESSORIES

KENSINGTON MAC II Stand & Extension Cables	\$19.95
KENSINGTON Turbo MDVSE	114.11
KENSINGTON Masterpiece MAC II	111.32
KENSINGTON MAC II Dust Cover	14.95
KENSINGTON Masterpiece +	119.20
KENSINGTON Masterpiece remote	118.75
SONY 3.5 Diskettes	144.27
DATEDESK MAC 101 Keyboard	16.72
FIFTH GENERATION Logical Connection 256K	463.29
FIFTH GENERATION Logical Connection 512K	529.42

MONITORS & VIDEO BOARDS

SONY	
SONY 1302	\$629.68
SONY 1304	694.18
SONY 1954	2784.09

MONITORM	
VIKING I	\$1738.64
VIKING 2400 Mono	1304.54
VIKING G3	940.30
VIKING 21	2759.09
VIKING Grayscale Color Board	1319.54

SIGMA	
SIGMA Laserview 19"	\$1655.40
SIGMA PAGEVIEW	749.95
SILVERVIEW SE-12662 / II-256	1434.10
COLOR MAX 19"	3795.45

NEC	
NEC Multisync Plus	\$931.03
NEC MACsync	542.05
NEC Multisync XL	2073.86

THE BIG PICTURE	
THE BIG PICTURE 1008 MAC II	\$1280.68
THE BIG PICTURE 2 21 Mono (MAC II)	1780.68
THE BIG PICTURE 1008 SE	1210.82
THE BIG PICTURE 2 21 Mono (MAC SE)	1709.10
THE BIG PICTURE 2 21 IG (MAC II)	2495.59
THE BIG PICTURE T19 Color4	374.15
THE BIG PICTURE T16 Color	2781.82

Colorboards	
COLORBOARD 224	\$3688.67
COLORBOARD 108	1095.90
1648S 19" Trinitron	3151.14
1648S 16" Trinitron	2250.00
1948H 19" Color	2399.70
1650S 16" Trinitron	2250.00
Tilt & Swivel	1221.15
Clearview 2 w/Card	121.84

PRINCETON GRAPHIC SYSTEMS	
PGS Ultrasync 12	\$493.33
PGS Ultrasync 14	519.66
PGS Ultrasync 16	887.77

PRINCETON GRAPHIC SYSTEMS	
FARALLON Timbukto 3.0	\$95.30
FARALLON Timbukto Ramette	189.42
FARALLON Phone-Net Connections	32.75
FARALLON Phone-Net Star Controller	1072.75
FARALLON MAC Recorder SoundSystem 2.0	159.94
ORANGE MICRO Grappler Spooler	39.95
ORANGE MICRO Grappler MAC	87.50
ORANGE MICRO Grappler for Laser 24 Pin	117.80
ORANGE MICRO Grappler for HP	109.87

**MOST ORDERS RECEIVED
BY 5:00 P.M. C.D.T.
SHIP SAME DAY**

HIGH VOLUME BIDS INVITED
2840 MARIA, NORTHBROOK, IL 60062 FAX (312) 291-1737

PC Magazine says... "You may find a better deal here than anywhere else."

WHY WAIT? CALL MAC DISCOUNT WAREHOUSE™ NOW!

Open terms available to approved credit

(800) 233-4426

In Illinois FAX
(312) 498-1426 (312) 291-1737

NEW AREA CODE 708 — EFFECTIVE 1/1/90

CDW™ EXTENDED HOURS
Sales 7:30-7:30 CDT Mon-Fri.
9:00-3:30 CDT Sat.
Tech Support 9:00-5:00 CDT Mon-Fri.



Good: Card charges are not submitted until end of month. Shipping and handling additional. On all hardware items, we accept 30-day returns. All prices reflect 7% discount for cash. Allow 10 business days for delivery when shipping for personal check. Software, chips and other electronic components are not refundable. All prices subject to change without notice. © 1989 MDW.

MMC
MICROCOMPUTER
MARKETING COUNCIL
of the Data Marketing Association, Inc.

PC WEEK
COMPARE
MARKET VALUE
MEMBER

Credit card charges are not submitted until time of shipment



MW89

BEST-SELLERS

▼ Months on chart	▼ Last month	▼ This month	
BUSINESS SOFTWARE			
53	1	1	Microsoft Word <i>Microsoft</i>
32	3	2	Microsoft Works <i>Microsoft</i>
44	2	3	Microsoft Excel <i>Microsoft</i>
40	4	4	PageMaker <i>Aldus</i>
29	6	5	MacWrite <i>Claris</i>
13	5	6	WordPerfect for the Macintosh <i>WordPerfect</i>
10	—	7	FileMaker II <i>Claris</i>
42	10	8	MacDraw <i>Claris</i>
12	9	9	WriteNow for Macintosh <i>T/Maker</i>
11	8	10	Adobe Illustrator/Illustrator 88 <i>Adobe</i>
EDUCATION SOFTWARE			
7	1	1	Where in the World Is Carmen Sandiego? <i>Broderbund</i>
20	2	2	Reader Rabbit <i>The Learning Company</i>
36	3	3	Math Blaster <i>Davidson & Associates</i>
33	4	4	Typing Tutor <i>Simon & Schuster Computer Software</i>
1	—	5	SAT Preparation Guide <i>Barron's Educational Series</i>
ENTERTAINMENT SOFTWARE			
32	2	1	Dark Castle <i>Silicon Beach Software</i>
36	1	2	MacGolf <i>PCAI</i>
35	3	3	Flight Simulator <i>Microsoft</i>
16	4	4	Falcon <i>Spectrum HoloByte</i>
1	—	5	SimCity <i>Maxis Software</i>
NETWORK/DATA COMMUNICATIONS			
32	1	1	TOPS <i>TOPS</i>
35	2	2	LocalTalk <i>Apple Computer</i>
21	4	3	PhoneNet <i>Farallon Computing</i>
28	3	4	AppleShare <i>Apple Computer</i>
3	5	5	Netware for the Macintosh <i>Novell</i>

▼ Months on chart	▼ Last month	▼ This month	
HARD DISKS*			
13	1	1	MacStack SD20 <i>CMS Enhancements</i>
2	—	2	Compact SC 40 <i>CMS Enhancements</i>
18	—	3	Rodime 20 Plus External <i>Rodime</i>
6	—	4	DataFrame 30/XP30 <i>SuperMac Technology</i>
27	3	5	Apple Hard Disk 20SC <i>Apple Computer</i>
ADD-IN BOARDS			
10	5	1	Video Board/Large Screen <i>Ryad</i>
10	2	2	Radius Interface Display <i>Radius</i>
22	—	3	Radius Accelerator <i>Radius</i>
22	1	4	Apple 2MB Memory Expansion Kit <i>Apple Computer</i>
3	—	5	Micro Snap Memory Expansion Kit <i>Microtech International</i>

PRODUCT WATCH

Editors' choice of other recent or forthcoming products of particular interest.

ColorBoard 264 *RasterOps 24-bit color board*

Microsoft Mail 2.0 *Microsoft Network mail*

PixelPaint Professional *SuperMac Technology*
Image processing software

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order vendors. Covers sales during June 1989.

*Does not include hard disks installed at the factory.

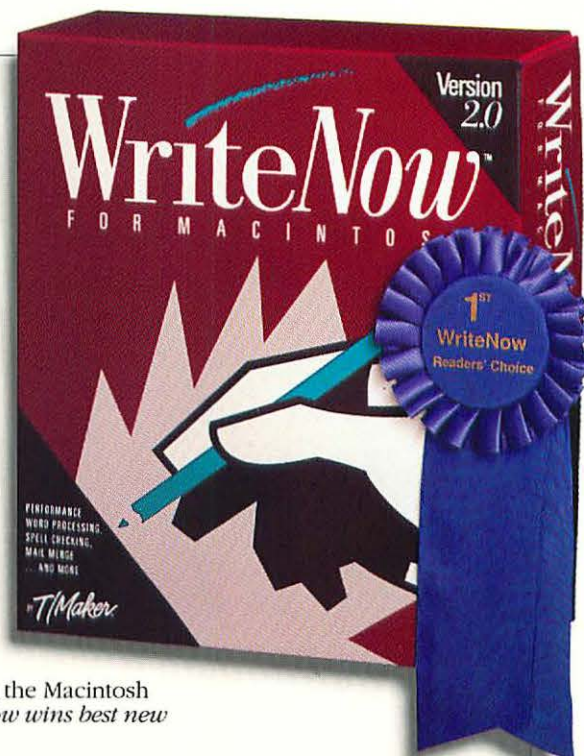
The Right Choice... WriteNow.



"Best New Word Processor"
MacUser Magazine, May 1989

"Readers' Choice"
MACazine, January 1989

"Golden Gavel Award"
MacGuide, Winter 1988



AWARDS & RECOGNITION

WriteNow is the highest-rated word processor in the Macintosh world. MacUser Magazine said it best—"WriteNow wins best new word processor hands down."

EASY-TO-LEARN, EASY-TO-USE

If we were to pick one word that our customers use to describe WriteNow, it's *usable*. A great word processor is more than just a stockpile of features—it's the *usability* of those features, how easy they are to learn and use, and how they feel under your fingertips when doing *real work*. Everyone claims ease-of-use, but WriteNow actually delivers it—and our awards and ratings prove it.

BUSINESS POWER & PERFORMANCE

WriteNow has all the power business users need, including: Mail merge; 100,000 word spelling dictionary; multiple columns; in-line graphics; format accelerators (style sheet equivalents); outline indenting, character and word counting, fixed and flexible line spacing, and much more. As important, WriteNow is the fastest word processor in the Mac world, whether you've got a small Mac 512KE or a loaded Mac IIcx.

	<i>Copy & paste large area</i>	<i>Search for a word</i>	<i>Spell check document</i>	<i>Change indents & double spacing</i>	<i>Undo ruler changes</i>
WriteNow 2.0	6.7 sec.	2.9 sec.	7.4 sec.	23.3 sec.	1.6 sec.
MacWrite II	45.9 sec.	40.2 sec.	33.6 sec.	44.7 sec.	24.7 sec.
MS Works 2.0	1 min. 50.8 sec.	35.7 sec.	5 min. 13.4 sec.	2 min. 24.1 sec.	1 min. 14.5 sec.
MS Word 4.0	21.6 sec.	11.0 sec.	3 min. 55.1 sec.	39.4 sec.	25.8 sec.

All tests performed starting with a 12-page test document on a Macintosh Plus with a 20 megabyte hard disk. Full repagination performed when necessary. © 1989 T/Maker Company. All rights reserved. The following are registered and unregistered trademarks of the companies listed: WriteNow, licensed to T/Maker Co. Macintosh, Apple Computer, Inc. MacWrite, Claris Corp.; Microsoft, Microsoft Corp.

Circle 332 on reader service card

T/Maker.

For more information:

T/Maker Company
1390 Villa Street
Mountain View • CA • 94041
Telephone: (415) 962-0195
FAX: (415) 962-0201



**ATTENTION MACWRITE
AND WORD USERS!**
T/Maker will honor your MacWrite
or Microsoft Word upgrade
offer! This is a limited-
time offer. Call
today for
details.



**1987 Macworld
World Class Award**



**1989 Macworld
World Class Award**



**1988 Macworld
World Class Award**

Turbo Mouse. Wins again and again and again.

That's right. For the third year running, the readers of Macworld magazine have voted the Kensington Turbo Mouse® "Best Input Device" for Macintosh® computers.

Who were the contenders? Every other trackball and mouse on the market. (Not to mention joysticks, keyboards and graphics tablets.) The winning secret? Simple.

Turbo Mouse is quicker, quieter, and easier to use. It delivers the winning combination of speed, precision, two buttons with extra features, and a comfortable, space-saving design—all for just \$169.95.

For a free brochure, or a dealer near you, call (800) 535-4242. Outside the U.S. or in New York, call (212) 475-5200.

